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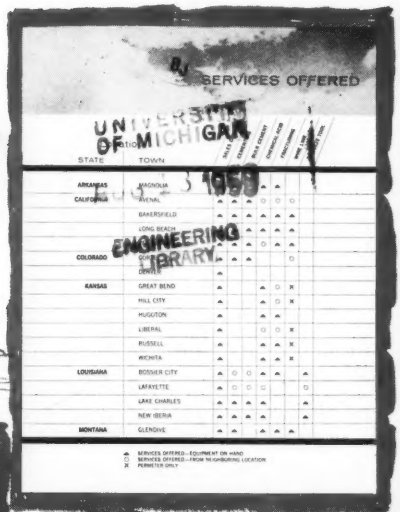

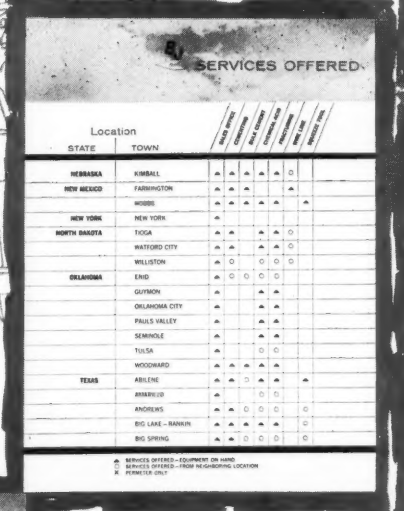

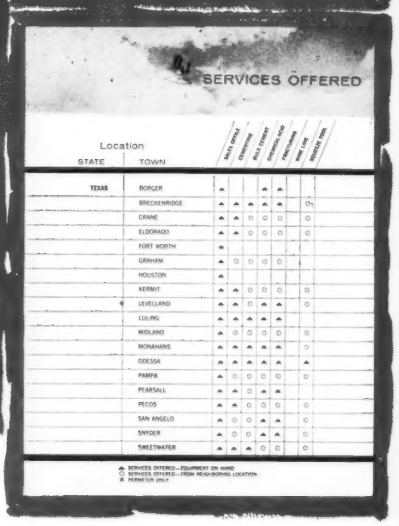

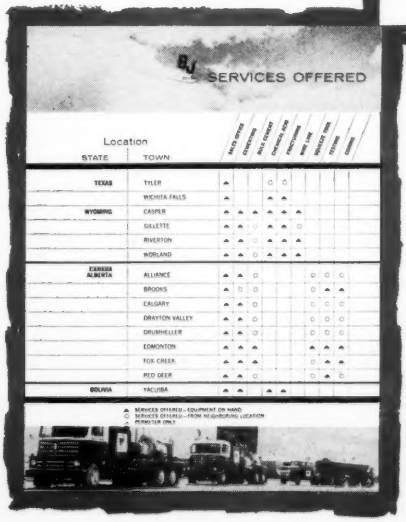

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District V Oil Industry Shows Improvement

Some improvement in District V oil industry conditions is evidenced by data covering the first half of 1959 compared with those of the corresponding period of 1958.

These data reported in the U. S. Bureau of Mines' "The Petroleum Situation in District V", (except for June, 1959, which is estimated from weekly U.S.B.M. and American Petroleum Institute reports) show that total demand during the first half of the current year increased approximately 10% over the first six months of 1958 and that, in contrast with a gain of 5,199,000 barrels in inventories in the first half of 1958, stocks decreased approximately 5,000,000 barrels in the first six months of 1959.

In evaluating the 10% increase in demand, which is at least double the normal rate of annual increase, it should be noted that results in the first half of 1958 were not up to par, because of the recession, a substantial cut-back in military purchases, the availability of natural gas for industrial use, and of hydro power for the generation of electricity.

Concurrently with the increase of 10% in demand in the District, total supply at 1,290,000 B/D, compared with 1,241,000 B/D increased only about 4% in the first half 1959 compared with the like period of 1958. This increase was accounted for entirely by increased receipts, both domestic and foreign, from sources outside the District.

California production of crude dropped from an average of 872,000 B/D in the first half 1958 to 845,000 B/D in the like 1959 period, while production of natural gas liquids remained constant at approximately 78,000 B/D. Thus total production of liquid hydrocarbons in the District decreased 27,000 B/D or 3%.

Total receipts, including both domestic and foreign crude and products, increased from an average of 291,000 B/D in the 1958 first half to about 367,000 B/D in the first half 1959. This increase, 76,000 B/D, is 26%, and was made up principally in increased deliveries of crude through the Four Corners pipeline which did not begin operations until late in the first half of 1958.

While total stocks decreased during the six months ended June 30, and while they were approximately 15,520,000 barrels lower on that date than on June 30, 1958, most of the decrease was registered in crude oil and residual fuel.

Compared with the total at June 30, 1958, crude stocks on June 30, 1959, dropped an estimated 6,961,000 barrels. The total on June 30 of this year was approximately 38,268,000 barrels; on June 30, 1958, it was 45,229,000 barrels.

Residual fuel stocks on June 30, 1958, were 32,390,000 barrels; on June 30, 1959, they are estimated at 26,878,000 barrels, which is a decrease of 5,512,000 barrels during the year.

The improved condition of residual fuel stocks can be traced to two factors: lower refinery manufacture and improved demand.

Supply of residual fuel in the first half of this year was approximately 290,000 B/D; in the first half of last year, it was 304,000 B/D.

Residual fuel demand in the first half of this year was about 320,000 B/D, against demand of only 273,000 B/D in the like 1958 period. The increase in demand was due in the main to increased shipments of the product to points outside District V, although demand within the District showed a slight improvement.

The combination of lower supply and higher demand resulted in a withdrawal of 5,415,000 barrels of residual fuel from storage between January 1 and June 30 of this year. During the corresponding six months of last year, 5,577,000 barrels were added to storage.

The gasoline situation, on the other hand, is not nearly as satisfactory from a statistical standpoint. In contrast with withdrawals from crude and residual storage, gasoline stocks at the end of June, last, were higher than at June 30, 1958.

The estimated increase in inventories of this product is 3,154,000 barrels, from a total of 28,859,000 on June 30, 1958 to 32,013,000 on June 30, 1959. In the first half of this year, gasoline stocks increased an estimated 3,220,000 barrels; in the first half of last year, they decreased 2,372,000 barrels.

Reason for the change is that the increase in gasoline demand did not keep pace with the increase in supply. The latter, up approximately 44,000 B/D, increased more than 8%, while demand, up about 17,000 B/D, increased only 3%.

Petroleum LORE and LINGO

By RICHARD SNEDDON

The Cave Dwellers

It may sound paradoxical to state that the refining of petroleum is older than its studied production, which is pretty much like saying that we treated oil before we found it. In actuality, however, many centuries before men started *drilling* for oil, they were already scooping it up from group seepages, or skimming it from the surfaces of ponds, and subjecting it to all sorts of experimentation. No one knows, for instance, when it was first discovered that petroleum could be used both as an illuminant and as a fuel, but it must have been a long time ago. There is no question that it cast an eerie flare over the nocturnal orgies and ritualistic capers of our earliest ancestors and also brought easy kindling and additional calories to the home fires of our cave-dwelling forbears. The employment of petroleum as a salve or unguent for soothing and healing skin eruptions and sores of various kinds, goes back so far into the remote past that it would be futile to attempt to pinpoint the date of its origin.

Light and Fuel

A paradox is not as the smart alecs would have you believe, the two boy friends of a bigamous drake. It means something unusual or out of the ordinary—from Greek *para*—"contrary to" and *doxa*—"opinion." Illuminant is from the Latin *lumen*, meaning "light"; fuel is any matter that produces heat or power by combustion. It comes from an old French word *fouaille* or "fireplace." That word *fouaille*, by the way, is probably also the source of "foyer" because if you are old enough, which perish forbid, you will remember that before the advent of air conditioning and wall heating, fireplaces in lobbies and waiting rooms were a popular institution and that is how they came to be called foyers. Nocturnal is from the Latin *nox*, "night"; an orgy was a Greek ceremonial rite in which old Bacchus the God of the double Gibson was honored in a pretty riotous way; and "ritual" is one of these terms about which the dictionaries seem to know next to nothing.

They tell us that it is related to the Greek *arithmos*, "number," which is no great help, but in any case its meaning is plain if not its derivation. "Kindle" is from the ancient Norse *kynda*, "to set on fire," "calorie" is from the Latin *calor* "heat" and with these few asides we are now ready to continue the narrative.

Regurgitation

In most untreated crude oils there are present to some extent two contaminants—water and sediment. These substances are both extraneous and harmful. It becomes quickly apparent to any beginning student in chemistry or physics that burning wet oil, either as an illuminant or as a fuel, is a somewhat hazardous business. The heating of such a mixture, even in small quantity, as it progresses, produces violent surface sputterings, strange regurgitations, and eventually if carried far enough, a boil-over or "puke" as the stillman vulgarly terms it. This can be dangerous and costly and is definitely something to be avoided. If you have ever seen a tank of blazing crude spill over during a refinery or tank-farm fire, you know how fiercely destructive and altogether terrifying it can be. Contaminants are impurities although etymologically they are merely substances that are brought into contact with others—from Latin *con* "with" and *tangere*, "to touch"—Extraneous is "foreign" from Latin *extra*—"outside"; "regurgitate" is to "disgorge" or "frow up," as children call it, from low Latin *gurgitare*, "to surge back"—and *re* "again"—and puke is just a vulgar old English word for the same disgusting process.

Spillovers

A boil-over is usually caused by the water accumulation at the bottom of the tank becoming superheated and suddenly flashing into steam. The steam has the same effect again as does the carbon dioxide in the pop bottle. It surges upward, carrying the blazing oil over the side in a frightening cascade. To superheat any liquid is to raise its temperature beyond that of its boiling point. That is only possible when some pressure is exerted upon its surfaces, in this case the pressure of the oil that lies above it vapor and the pressure of the vapors that gather in the top of the tank faster than they can escape. In any event a superheated liquid is as touchy as a motorist on a freshly oiled country road, with a white linen suit and a flat tire. It is liable to explode any minute and when it does so under a tankful of blazing oil, we have one of the most stupendous flame throwers imaginable, a regular *schkwirten juicenkind firensphitter!*

Water & Sediment

Even in the laboratory (workshop from Latin *labor* "work") it is difficult to distill a wet oil sample without minor disaster. I have seen a small one erupt with such explosive power as to thoroughly smear an expansive ceiling of more than ordinary height . . . one that had just been freshly painted, incidentally, and in a delicate pastel tint, too. In view of the incompatibility of oil and water, it is more than likely that one of the brighter lads among those who tended the lamps for the voodooistic Chief Zombies or the tribal witch Doctors of long ago, was first to calm the "berling erl" by separting and getting rid of water. Thereby, who knows, he may have been the initiator of the entire refining business. The same is probably true of sediment. One of the basic requisites of an ointment or beauty preparation is smoothness, and the presence of gritty intrusions in their petroleum face lotions must have been detested by the participants in ancient Miss Universe contests. The genius who first heated such a confection to reduce its viscosity and let the sediment

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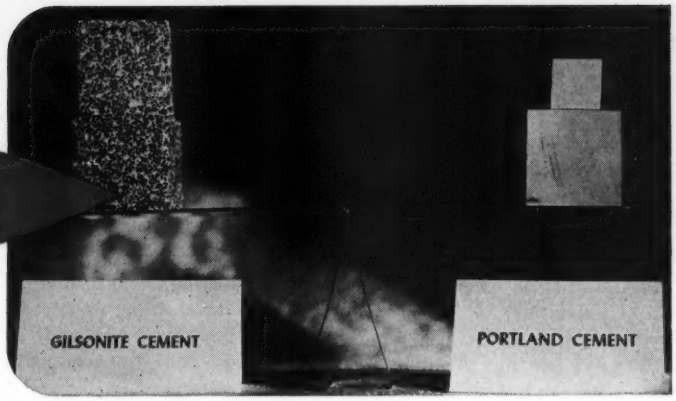

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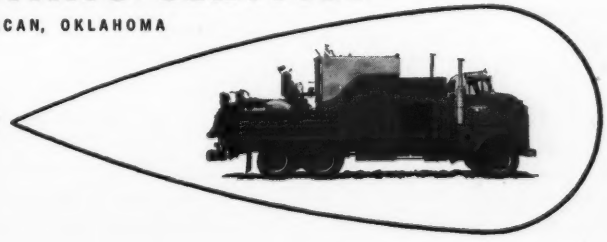

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sink to the bottom, or whirled the container and the oil around his head to accomplish the same result by centrifugal force, was also a pioneer refiner in a small way. Incompatibility is failure to harmonize or get along a g r e e a b l y together like married couples.

The Beginning of Refinery Research

These were the initial stirrings of the scientific mind in a new field . . . the first active effort to shape raw petroleum to the particular needs of people. That is the function of refining, and how fully it has been accomplished in the intervening years by the magic of chemistry and physics is one of the most interesting stories in the industrial lexicon. The entire course of refining progress has been charted by a number of epochal events which may seem now to be somewhat less than exciting but at the time of their occurrence were of major importance. Prior to the turn of the present century much of the world had nothing to illumine its night hours but crudely improvised torches made from resinous woods, oil impregnated ropes, and sundry other crude devices, but with the invention of the common house lamp with its fuel reservoir, adjustable wick, and shielded flame, the oil industry was given a boost of major dimensions. At the start these lamps were fueled with crude, untreated oils made from coal tar or shale. They smoked abominably; their wicks crusted quickly, dulling their illuminating capacity; they had all pervading odors that were anything but pleasant—and they had a nasty taste. This I know because in my boyhood the local grocer was the principal supply man and for the first 12 years of my life everything I ate tasted of coal oil.

Fractionation

The refining of petroleum in its earliest form was a continuation of the method used for making coal oil. It consisted simply in heating the raw crude to boiling in a still—passing the vapors through coils of tubing, cooled by flowing water, and catching the condensate in a suitable receiver. The distillation was carried on until there was nothing left in the still but a black mess we now know as residuum. When one batch had been finished, it was necessary to clean everything up as well as possible and start a new one. The condensate could be split into commodities of progressively higher boiling points by merely replacing the receiver when certain limiting temperatures had been reached in the still. For example everything that came over up to 450° F was naphtha; from 450° to 600° F was kerosene; and the rest was gas-oil and residuum.

Demand for Kerosene Grows

When it was discovered that kerosene was a much better illuminant for the household than anything that had been tried hitherto, the demand for the commodity increased by leaps and bounds and the big problem of the refiners was how to get rid of such inconsequentials as naphtha, gas-oil, and residuum. (Naphtha was equivalent to crude gasoline, and gas-oil was similar to what we now call diesel oil). There was also some gas delivered with the oil as it flowed from the wells even in those remote days, but it was wild, badly behaved stuff, and it was given the air early in the proceedings.

Saturates & Unsaturates

The separation of the various petroleum fractions is never quite complete as was pointed out in the discussion of volatility. Small quantities of naphtha were still present in the kerosene. These had a tendency to vaporize, accumulate in the lamp globe, and explode when exposed to an open flame. Many a home was destroyed by fire started in this way and although at first the kerosene was simply aired to get rid of light materials the process stimulated refiners to search for more effective methods of purifying it and eliminating the explosion hazard. This, of course, was eventually achieved and lamps of the type described were used almost universally with practically no risk. Meantime, it was noted that when kerosene was exposed to the atmosphere for any length of time, certain substances in its composition broke down or changed in character, causing a quite pronounced discoloration. This led to further studies and the eventual discovery that the change was due to oxidation of unsaturated hydrocarbons with the coincidental formation of complex gums and resins. These unsaturates were subsequently removed by treating the distillate with strong sulphuric acid. As a matter of fact this is how we used to determine the percentage of unsaturated material in any given sample of hydrocarbons in the lab. The paraffins and other saturates were not affected when a measured quantity of distillate was shaken with the acid. It thus remained unchanged, while the unsaturated material combined with it to form a black, sticky mess of so-called sulphonates.

Railway Fuel

The refineries were at this time going full blast and it looked as if we might safely settle down to a lifetime of kerosene manufacture. Then along came a young German mechanic by the name of Otto with a new idea called the four-cycle internal combustion engine. Immediately we lost interest in the kerosene lamp and headed into the era of automotive transportation which split the population of the United States into two stoutly opposing factions—people and pedestrians. As fuel for the perambulating battering rams, kerosene proved to be a trifle on the heavy side and without further parley gasoline was relegated to the top spot on the bill. Sometime earlier it had been found that the heavier fractions of many crude oils made excellent fuels for railway locomotives. The oil product gave off no sparks such as coal did and consequently presented no fire hazard. It was completely consumed and hence presented no ash disposal problem. It could be introduced into the fire box by gravity without manual labor such as was required by shoveling coal. It was compact, could be contained in a closed system, and had more power than coal. Thus, another petroleum derivative became a major requirement of the expanding economy and the refining processes began to play a more significant part in this expansion.

Gasoline in Top Demand

The public had taken terrifically to the automobile. Ford came out with a cheap version of the self-propelled vehicle. I believe my first touring car cost me, new, about $400. Then some reckless wizard of finance invented the installment plan and in no time at all there were so many car owners in the United States that on a clear night after the children had gone to bed, one could actually hear the payments fall due. This innovation almost completely killed off the horse as a beast of burden and it scared the feathers off other farm animals too, but it was a great thing for the oil industry. So severe did the automophobia epidemic become that soon there was a shortage of gasoline. Only a small part of the petroleum produced could be realized as gasoline; there wasn't enough crude in

sight to make up the deficiency; and anyway, refining capacity was already taxed to the limit.

Cracking is Discovered

Field men drilled with all the ardor of a battalion of dentists, but the harder they worked the more cars they could buy and the more gasoline they needed. Despondency was rife in the derrick groves and things were looking mighty hopeless when the situation was saved by the wit of a stillman whose name has passed into oblivion. This astute fellow had convened with a few friendly souls one night. The conference had extended into the early morning hours, apparently due to deciding the relative merits of an all-blue and a full house. He was, as might be expected more than usually tired—even for a stillman, when he showed up on the job next morning and despite his best effort to remain on the strict *qui-vive,* he dozed off into a sound slumber. The consequence was that still temperatures and pressures went on a rampage and our nameless hero instead of blowing up the still discovered the process known as "cracking" . . . What actually happened was that the excessively high still temperatures and pressures resulted in a greater yield of gasoline-type distillate than had formerly been obtained from the same blend of crude oils.

Commercial Adaptation

This, as we shall learn, was another great milestone along the way of refining progress. Soon cracking was no longer accidental; chemists all over the country were advertising with high pressure, high temperature bombs, and patents were being requested for all manner of extravagant ideas. One bright chap, knowing apparently that the function of cracking was to make small hydrocarbon molecules out of large ones, was actually awarded a patent for an encased steel roller in which were inserted a number of extremely sharp edged blades. The theory was that in passing over the roll, the large molecules in the cracking stock would be cut down to a more desirable size. In the course of time, however, special equipment was developed in which a substantial fraction of the crude oil (in a heavier-than-gasoline range) was subjected to temperatures in the neighborhood of 800° F and 600 lbs. per square inch pressure. Under these conditions the yield of gasoline was considerably increased—in many instances as much as 50%. Early stills were of the batch type, treating one lot of oil at a time, but it wasn't long until continuous stills were in operation. The first cracking plant I ever saw was a Cross unit. In this the stock was heated to a high temperature in a tube still and then held in a large, thick-walled, steel reaction chamber at high pressure for a short time. It was very effective in producing the extra gasoline, but I recall (this was over 35 years ago) that it had to be shut down about every ten days or so to permit the coke to be cleaned out, and between times we occasionally cracked a tube and produced some pretty exciting pyrotechnics.

The Mechanics

This kind of treatment is called *thermal* cracking because it involves the use of heat, with a change of pressure usually, but without the use of any external aid. It takes its name from the Greek *therme,* "heat." It is the predecessor of a long list of what might be called "reforming" methods.

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Its mechanism will perhaps be better understood if we remember that as any series of hydrocarbons progresses from the lowest to the highest member, the proportion of carbon to hydrogen increases. Let us look at a pair of paraffins for example, methane (CH_4), the first member of the paraffin series and pentadecane (C_{15} H_{32}), the fifteenth member. Note that in the methane, carbon and hydrogen are present in the ratio of one atom to four, but in pentadecane, (C_{15} H_{32}), (Greek *pente* "five"—and *deka,* "ten") carbon and hydrogen are present in the ratio of about one atom to two. It thus becomes obvious that to make little molecules out of big ones (cracking) it is necessary to provide extra hydrogen or eliminate some carbon. Conversely to make big molecules out of little ones (polymerization) we must add carbon or subtract hydrogen to get the two elements in the proper proportion. Adding hydrogen, as already observed, is known as hydrogenating and taking it away is termed dehydrogenation. These two processes have been responsible for great advances in refining technique and technology, not only in themselves, but by opening the door to further researches and discoveries that have virtually revolutionized the entire petroleum industry.

How it Works

It has been suggested as an example of cracking that pentadecane might be broken down by heat and pressure in the following manner:

$$2\,C_{15}\,H_{32} = 2\,C_8\,H_{18} + 7\,CH_4 + 7C$$

pentadecane octane methane carbon

Again, we would exhort our readers not to be frightened off by the apparent Einsteinian abstruseness ("hidden meaning" from *abstrusus,* a part of the Latin verb *abstrudere,* "to conceal") of the formula. It involves nothing more advanced than simple arithmetic. Note again how the equation balances. Two molecules of pentadecane break down into two molecules of octane, seven molecules of methane, and seven atoms of carbon are taken out. Segregate all the C's and H's—then add them up separately and you will see that the addition of symbols is not one whit different from the addition of numbers of apples and oranges. If we were to accomplish this cracking operation continuously in a reaction chamber such as the Cross unit already referred to, we would again have to shut down occasionally to clean the thing out or we would eventually have the whole apparatus choked up with coke.

The Spreading Process

Besides thermal cracking, catalytic cracking, polymerization, isomerization, alkylation, platforming, and a dozen and one other processes that have expanded the scope of petroleum refining tremendously and have improved and increased its products beyond measure. There is the development of ethylization (using tetraethyl lead to banish detonation). This has permitted the automotive engineers to go on with the designing of higher and higher compression engines. The development of aviation with its constant seeking for greater carrying capacity and higher speeds has crystallized the coincidental needs for new type fuels and lubricants. Increased speed and power have been the stimuli that have kept the refiners on their toes up to the last few years. These are still major objectives but now we have emerged into a fantastic world of plastics, petrochemicals, fractional atoms and molecules, and additives of the most amazing variety. From petroleum we now manufacture ammonia, hydrogen peroxide, medicines, and such an array of organic chemicals as to be almost unbelievable. The substitution of atomic energy for petroleum power may some day take place, but by that time atomic energy will have so increased the already stupendous array of synthetic petroleum chemicals that the industry far from being retarded by the innovation will be more productive than ever.

Fluid Injection to Increase Oil Recovery

There may be a 100 percent increase in the amount of oil recovered from oil wells through the use of fluid injection methods, according to a technical paper presented at the Fifth World Petroleum Congress.

The paper, entitled "Fluid Injection for Increased Oil Recovery" and presented by George Roberts, Jr., and Scott W. Walker, of Pan American Petroleum Corp., Tulsa, Okla., pointed out that about two-thirds of the oil found in the United States cannot be produced by primary methods. Part of this oil, however, can be recovered by fluid injection. Over the next 50 years, the paper continued, fluid injection may yield an additional 85 billion barrels of oil—the same amount which can be obtained through primary recovery alone.

The fluid injection methods that will realize this additional production are (1) conventional gas injection; (2) improved gas drives; (3) waterflooding and (4) thermal methods.

A paper presented by Takado Fuchida, a Tokyo University professor and the Teikoku Oil Co., Japan, shows how fire flood oil recovery tests were conducted both in the laboratory and in the field.

The study has shown that the following conditions are required for a successful fire flood: (1) oil in place must be heavy enough to maintain the fire front and (2) within this limit the overall efficiency of combined effects of heating and injection in a pattern drive system is greater when the oil is lighter.

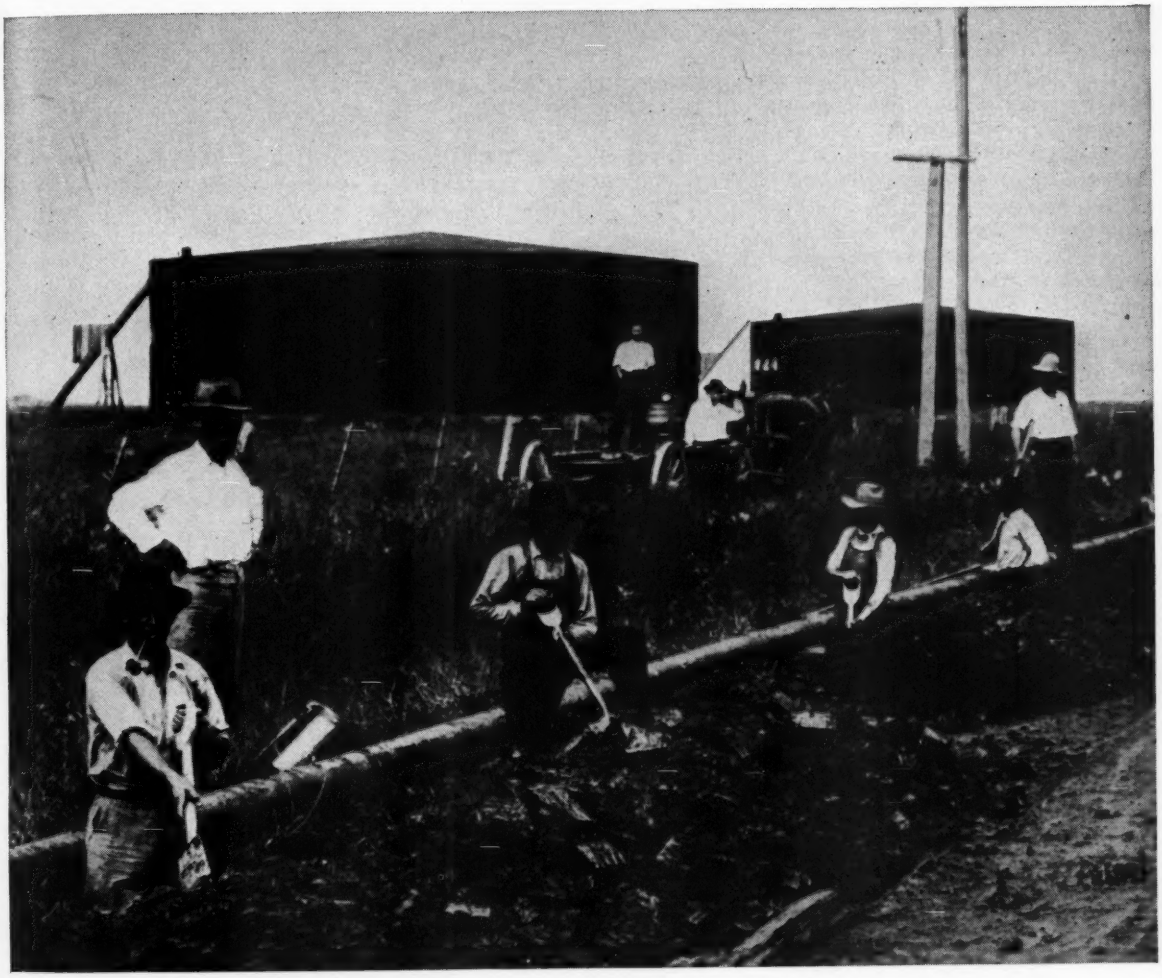
Another paper presented outlined new ways of predicting in advance more efficient and economical means for producing high octane gasolines from the many different types of crude oils.

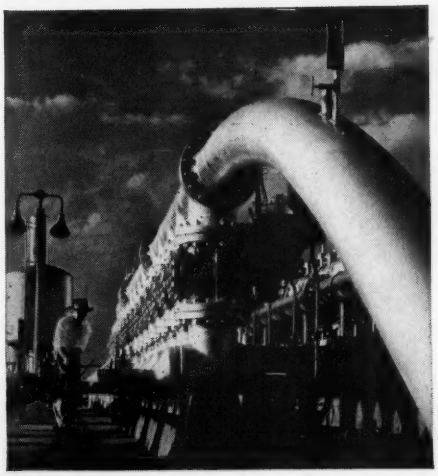
The paper said that techniques have been developed for describing in mathematical language the most important chemical reactions occurring in catalytic reforming—the process for making much of today's high octane gasoline. The complex language is then fed to modern electronic computers which quickly provide answers to many questions that heretofore have eluded scientists. The paper was presented by H. G. Krane and A. B. Groh, Standard Oil Company (Indiana) Chicago, Ill., and B. L. Schulman and J. H. Sinfelt of Esso Research and Engineering Co., Linden, N.J.

A paper presented by an Italian technologist, Dr. Giulio Balabio, of Milan, said that with several plants producing a variety of interesting materials derived from petroleum, the Italian petrochemicals industry is enjoying boom times.

A few indications of this are the development of new plastics of exceptional mechanical strength, high softening and melting points which are manufactured by controlled polymerization, and a recognition that a product of two different materials, an ethylene-propylene copolymer, will attain great importance among synthetic rubbers.

The underground road to market





▲ **YESTERDAY.** Texaco's early growth was speeded by its promptness in getting pipelines to rich new oil fields as they were discovered. Texaco was a pioneer in constructing longer, more strategic pipelines. In fact, one of the first acts of Texaco when it was born in 1902, was to complete a line from the fabulous Spindletop field to Port Arthur.

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Two District Offices Established by Sunray

O. A. Graybeal, division production manager of Sunray Mid-Continent Oil Company's West Coast Division recently announced the establishment of two district offices and the appointment of key personnel for those offices.

Southern District headquarters will be at the Rancho San Francisco Lease, near Newhall, California and will supervise company operations in Ventura, Orange and Los Angeles counties. Northern District headquarters, with jurisdiction over that part of California north of Ventura and Los Angeles counties, will soon be opened at 930 Truxtun Avenue in Bakersfield.

In announcing the new district set-up, a part of Sunray's current decentralization program, Graybeal also made public the appointment of the following staff personnel for his Los Angeles headquarters: T. H. Acres, division engineer; P. A. Carpenter, drilling co-ordinator, and J. E. Klipp, senior reservoir engineer.

M. C. Welch has been named district manager for the Southern District and H. M. Stanier will serve in that capacity for the Northern District. Welch formerly was assistant district superintendent for production and Stanier has been serving as senior staff engineer. Both are long-time employees of Sunray.

Other appointments announced include: Southern District—J. O. McDonald, district engineer; A. G. Goodwin, district office manager and M. R. Elliott, field superintendent. Northern District—R. M. Brazier, district engineer and Leroy Hull, district office manager.

Simultaneous announcement of exploration department personnel for the new district offices was made by John H. Douma, vice president and division general manager of the West Coast Division, as follows: Southern District—F. A. Reynolds, district geologist and R. J. Hindle, district exploitation geologist; Northern District—R. G. Maynard, district geologist and E. A. Templeton, district exploitation geologist.

District offices will be further staffed with production and exploitation personnel presently located in the Los Angeles office and area offices at Rancho San Francisco, Santa Maria and Coalinga.

Douma and Graybeal said the establishment of district headquarters, with managers directing field operations from the immediate areas, will permit greater autonomy for each district with more authority and responsibility for all supervisors.

E. C. (Gene) Reid

Occidental Petroleum In Merger With Gene Reid Drilling, Inc.

Occidental Petroleum Corporation has merged with Gene Reid Drilling, Inc., of Bakersfield (Calif.), it was announced jointly by E. C. (Gene) Reid, president of the firm bearing his name, and Dr. Armand Hammer, Occidental president.

Gene Reid was elected to the Board of Directors of Occidental and will serve as executive vice president in charge of all oil and gas production and development of the parent company. The combined organizations are developing a complete geological and exploration department to be supervised by E. F. (Bud) Reid, vice president of the Reid organization.

Gene Reid Drilling, Inc., was incorporated in 1947 as a successor to a partnership which had begun in 1942. It is engaged in the operation of an oil and gas contract drilling business as well as producing oil and gas. Currently it owns and operates 54 producing oil wells on properties in oil-rich Kern County, Calif. It operates its own drilling rigs and since its incorporation has drilled and completed under contract more than 2,600 wells throughout several western states. The company has drilled under contract for practically every major oil company and large independents.

Gene Reid has spent better than 40 years in the oil-well drilling and producing industry, having started as a roustabout at the age of 15 in the Maricopa area of California.

Dr. Hammer said the Reid firm will continue to operate as an independent contractor, utilizing its equipment whenever and wherever advantageous in the Occidental drilling program. Occidental will utilize the entire Reid organization, including its geological, exploration and production staffs.

"This merger will greatly increase the operational strength of Occidental Petroleum," Dr. Hammer said.

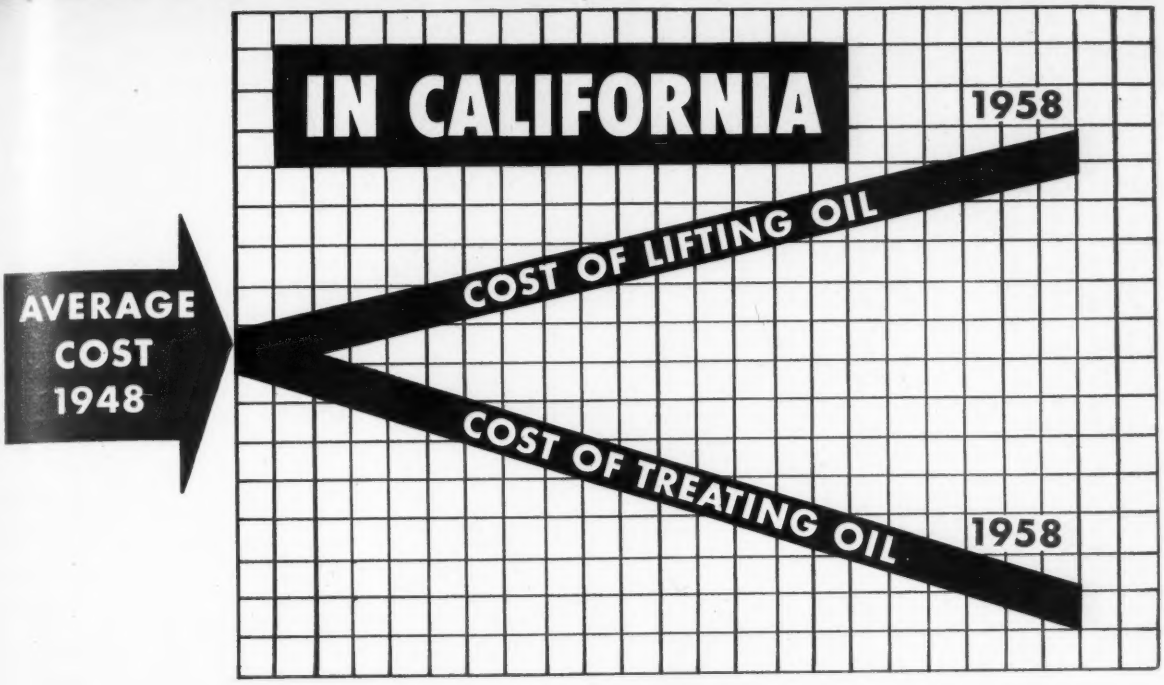
Skelly and Tidewater Discuss Merger

Major management representatives of Skelly Oil Company and Tidewater Oil Company have had several meetings to discuss the basis for a proposed merger, Tidewater President George F. Getty said this month.

The merger would bring together all phases of the two companies' operations, involving the widespread activities throughout the U. S. and foreign countries of the two major integrated oil companies, according to Getty.

No contract presently exists between Skelly and Tidewater for the merger. The only agreement, he said, is a set of ground rules for evaluating oil and gas reserves and other assets of the two companies to assist in arriving at a mutually acceptable ratio of exchange.

"The operations of Skelly and Tidewater would put the combined company in a more competitive position," Getty stated. "Skelly has greater crude oil producing capacity than presently used by its refineries. Tidewater on the other hand has refinery capacity and crude oil requirements in excess of its crude oil production. A merger would give the combined company a better balance between crude supply and refinery crude requirements."



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NETHERLANDS: F. E. C. Jenkins, Hoefbladlaan 134, The Hague
PERU: International Gas Lift Company, Apartado 71, Talara
TRINIDAD: Neal and Massy, Ltd., Port of Spain, P. O. Box 544, San Fernando

Super tanker "Torrey Canyon" unloads cargo at new L.A. Harbor Terminal.

L. A. Harbor Super Tanker Terminal Dedicated

The world's first protected supertanker terminal was dedicated July 16 at Los Angeles Harbor with the push of a button on a control board which enables one man to unload 35,000 barrels of crude oil an hour.

Lloyd A. Menveg, president of the Board of Harbor Commissioners, then officially turned the huge facility over to A. C. Rubel, president of the Union Oil Company of California which will operate it under a 30-year preferential assignment. This agreement stipulates that any company bringing supertankers into the municipal port may use the new terminal.

Other speakers included John S. Gibson, Jr., president of the City Council, and Bernard J. Caughlin, the harbor's general manager.

Caughlin said that completion of the terminal makes Los Angeles the first port in the world to catch up with the recent tremendous increase in the size of tankships. Previously, these maritime monsters have had to take the pounding of the open sea while discharging their vast cargoes of Persian Gulf crude through pontooned pipelines.

New Standard Facilities at Carpinteria Under Construction

Construction has been underway at Carpinteria for several days on facilities for handling oil and gas produced on the Standard-Humble drilling platform two miles off shore from nearby Summerland.

Spokesmen for Standard Oil Company of California, Western Operations, Inc. announced that five coordinated construction jobs are involved in the project with completion scheduled in about four months. Total cost is estimated at approximately $2,000,000.

The five construction phases include grading, installation of oil handling facilities, erection of tankage, construction of office and control buildings and laying of submarine pipelines to the producing wells on the platform.

Construction of the submarine lines will be handled by Morrison-Knudsen Company as prime contractor and will entail erection of temporary aerial cableways to a point 600 feet from shore. All underwater operations will be coordinated with the California Fish and Game Commission to assure complete protection of marine life.

IPAA Statement On Oil Imports

The Independent Petroleum Association of America has called the government's proposed regulations governing the limitation of oil imports for the last half of 1959 "encouraging and commendable in that it would maintain consistent and firm standards as to oil imports."

In a letter to Imports Administrator, Captain M. V. Carson, Jr., IPAA General Counsel Russell B. Brown cited four effects the government's May 28 proposal would have as to total allowable imports. They were:

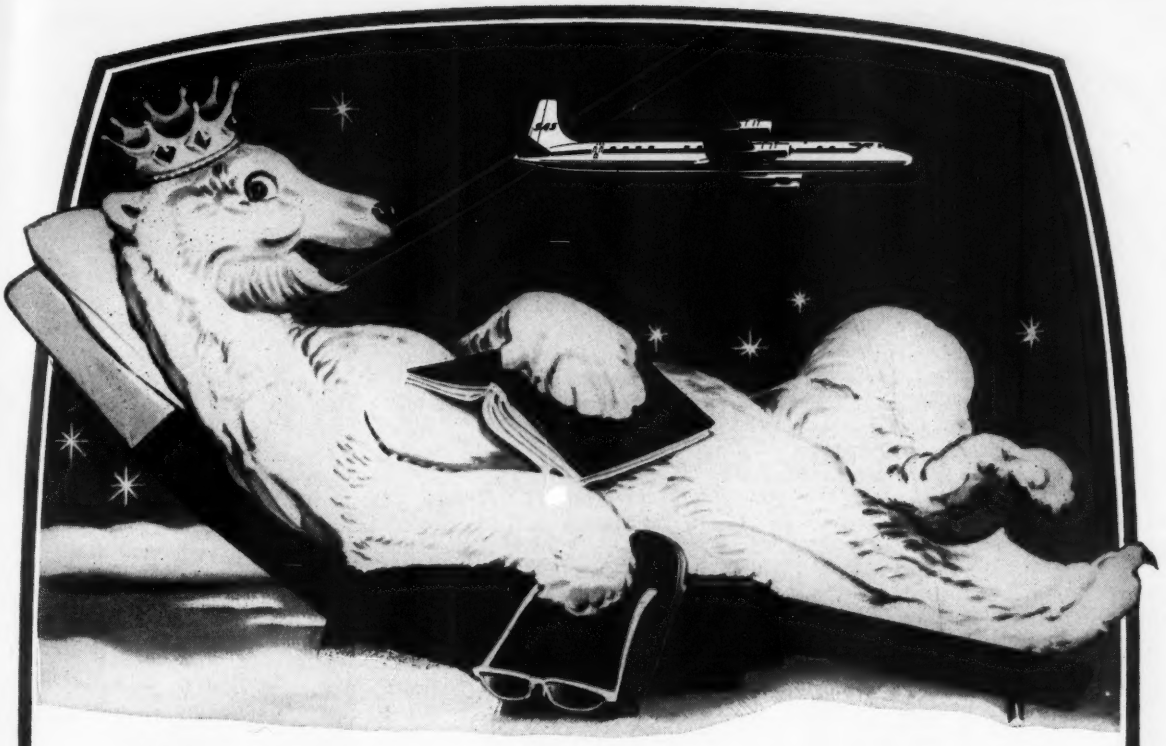
"1. Clarify and make more explicit certain provisions of the regulations.

"2. Maintain the same basic standards, as now exist, for limiting total allowable imports of crude oil, unfinished oils and finished products.

"3. Adjust imports of crude oil and unfinished oils (a) downward in Districts I-IV to reflect lower estimated demand, and (b) upward in District V to reflect higher estimated demand.

"4. Maintain the existing allowable level of imports of finished products, based on 1957 imports."

Brown said that inasmuch as the proposed amendments maintain firm standards as to oil imports they impart to the domestic industry and importing companies "a basis for the confidence needed in planning long-range investments and operations.



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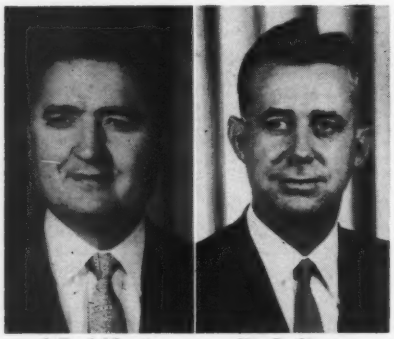
Personalities IN THE NEWS

New Assignment for Dailey at Tidewater

T. M. Dailey, Jr., executive assistant to the president has been appointed manager, planning and personnel department, Tidewater Oil Company President **George F. Getty II,** recently announced.



JoEarl Morris W. G. Sharp

Manager Appointments Announced By Continental-Emsco

Continental-Emsco Company has announced the appointment of **William G. Sharp** to the position of manager, Export Division, New York City, and **JoEarl Morris,** to the position of manager, Continental-Emsco Company C. A., Caracas, Venezuela.

Sharp will direct the sales and service of Continental-Emsco Company's equipment throughout the 35 foreign countries where C-E presently operates or has agents or representatives. He has been an employee of Continental-Emsco since 1947 and was previously manager of Continental-Emsco's Venezuelan company.

Morris, a veteran of 19 years with the oil field equipment supplier and manufacturer, will direct the activities of the two offices and three supply stores Continental-Emsco operates in Venezuela. Morris, formerly the assistant manager for Continental-Emsco Company C. A., will continue to headquarter in Caracas.

UOP Appoints Three Geographical Area Coordinators

Universal Oil Products Company has assigned three members of its commercial development department as coordinators of sales and licensing activities for specific geographical areas, **M. D. Gilchrist,** vice president of process sales, announced.

C. R. McMahan will coordinate U. S., Canada, United Kingdom, Continental Europe and Middle East activities. Coordinator for Mexico, Central and South America and Caribbean area is **E. W. Schnabel. W. R. Sedlacek** will serve as coordinator for Australia, Japan and the Far East. All three coordinators will report to Davis Read, manager of the commercial development department.

According to Mr. Gilchrist, these positions were established because of increased UOP activity developing from world-wide expansion of existing refinery facilities and construction of new refineries and petrochemical plants.

Dunn Promoted by Johnston Testers

The appointment of **J. J. Dunn** as manager of Export Sales in the Marketing Department headquartered in Houston, Texas, has been announced by Johnston Testers, Inc.

Dunn's oilfield experience dates back to 1947 when he joined the McCullough Tool Company as a service engineer. In 1949 he joined the United Oil Well Service Company in Anaco, Venezuela, and returned to McCullough in 1951 after serving a year of active duty during the Korean War as a sergeant in the Marine Corps. He left McCullough in 1955 to join Servicio Tecnico de Pozos in Anaco, Venezuela.

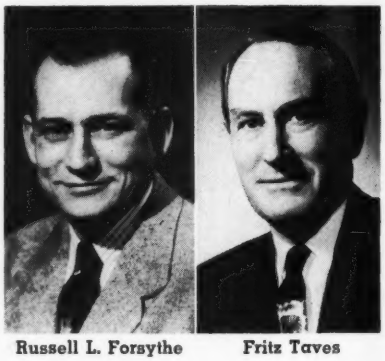
Dunn joined Johnston Testers in November of 1958 as a sales engineer and was promoted to assistant to the Northwest division manager in Denver February 1, 1959.

Johnston's Marketing Department in Houston is located in the Bank of the Southwest Building.

New Assignment for Lewis At Oil Well Supply

The appointment of **Guy A. Lewis** as assistant district engineer—machinery and equipment sales and service at Los Angeles for U. S. Steel's Oil Well Supply Division was announced by **D. S. Grubbs,** California area manager.

Lewis was employed by "Oilwell" in June, 1947 at Los Angeles. He was transferred to Ventura, Calif., in 1953 and has been located there prior to his present appointment.



Russell L. Forsythe Fritz Taves

Fritz Taves Retires; Forsythe Named Manager

Fritz Taves, manager of Schlumberger Well Surveying Corporation's Pacific Coast Area, has retired according to an announcement by **W. J. Gillingham,** president of Schlumberger. Taves, joined Schlumberger in 1935. From 1922 to 1927 he was employed by Miley-Keck and E. J. Miley. Thereafter he worked for Richfield until 1929. He served in the California State Oil Umpire's office from 1929 to 1935.

During the war, from 1942 to 1946, he served in the U. S. Navy as a Captain.

Russell L. Forsythe succeeds Taves. Prior to his appointment to the Pacific Coast Area Office, Forsythe worked in several field branches. He was assistant area manager of Canada from 1950 to 1952 and Kansas division manager from 1952 to 1955.

H. Y. Hyde

Hyde Promoted by Tidewater

H. Y. Hyde, Tidewater Oil Commany vice president for manufacturing, has been appointed group vice president for manufacturing, marketing and petrochemicals, Tidewater President **George F. Getty, II,** said recently.

Hyde joined Tidewater, immediately after leaving M.I.T., as a research chemist in the company's research and development department at its Avon, California, refinery and the following year was named general supervisor of the department.

In 1946, Hyde was elected vice president of manufacturing for Tidewater's western division and, in 1954, was placed in charge of all refining operations, coast-to-coast.

Promotions and Reassignments Announced by Schlumberger

Five high-level promotions and reassignments have been announced by the Schlumberger Well Surveying Corporation, including the promotion of **Louis E. Magne** from Schlumberger Southwest area manager in Houston, Texas, to vice president of operations of Societe de Prospection Electrique. The latter organization is Schlumberger's operating company for Europe, the Middle and Far East.

Thus, the promotion will return Magne to his native France, for headquarters of the European company are in Paris. Magne has served Schlumberger in Rumania, Venezuela and in many United States locations.

Alan Morazzani, formerly Rocky Mountain area manager in Denver, replaces Magne in Houston as Southwest area manager.

The new Southwest area manager joined Schlumberger in 1935 and first served in Venezuela. He served in various locations in Texas and Louisiana, and prior to the current assignment was division manager at Midland, area manager in Evansville and Rocky Mountain area manager.

W. R. (Bill) Mills, Jr. has been promoted to Rocky Mountain area manager in Denver. Mills has served as field engineer in several locations and is a former assistant manager of the Southwest Area in Houston. Before his present promotion, he was manager of the South Texas Division at Corpus Christi.

L. C. Chappel is now division manager of the Oklahoma Division with headquarters in Oklahoma City, having most recently been assistant to the vice president, Schlumberger of Canada.

Chappel joined Schlumberger in 1948. He served at Ardmore, Pawhuska and Wichita prior to transfer to Regina, Saskatchewan, where he was Eastern Canada division manager. Later, Chappel was stationed at Edmonton as Western Canada division manager.

J. L. Heath has been assigned as assistant to the manager of the Mid-Continent Area at Tulsa. Formerly, he was Oklahoma division manager. Heath joined Schlumberger in 1947 and served the company in Falfurrias, Pleasanton, Kenedy and Wichita Falls before going to Oklahoma City. Heath replaces **E. A. Colle** who has been transferred to Corpus Christi.

New Appointments at Petrolite

Dr. G. J. Samuelson, director of research for Petrolite Corporation, has announced the appointment of two new men to his staff in St. Louis: **Frederick John Ludwig, Sr.,** formerly research chemist for Mallinckrodt Chemical Works, Uranium Division and **Rupert H. Poetker,** who was former corrosion engineer for Sunray Mid-Continent Oil Company.

Poetker was one of the first to determine the effectiveness of the squeeze application to inhibit corrosion of sub-surface production equipment and has written articles and presented technical papers on this subject.

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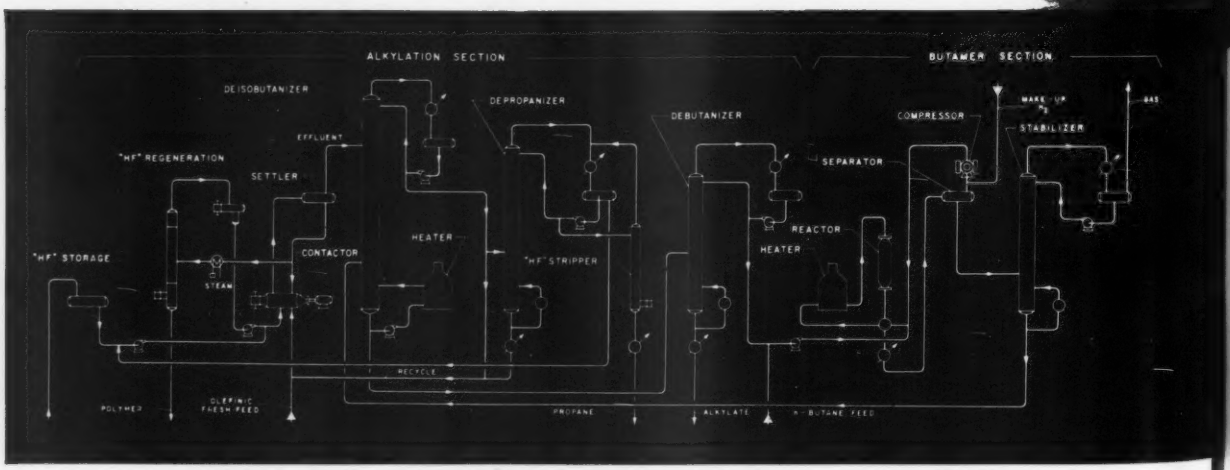

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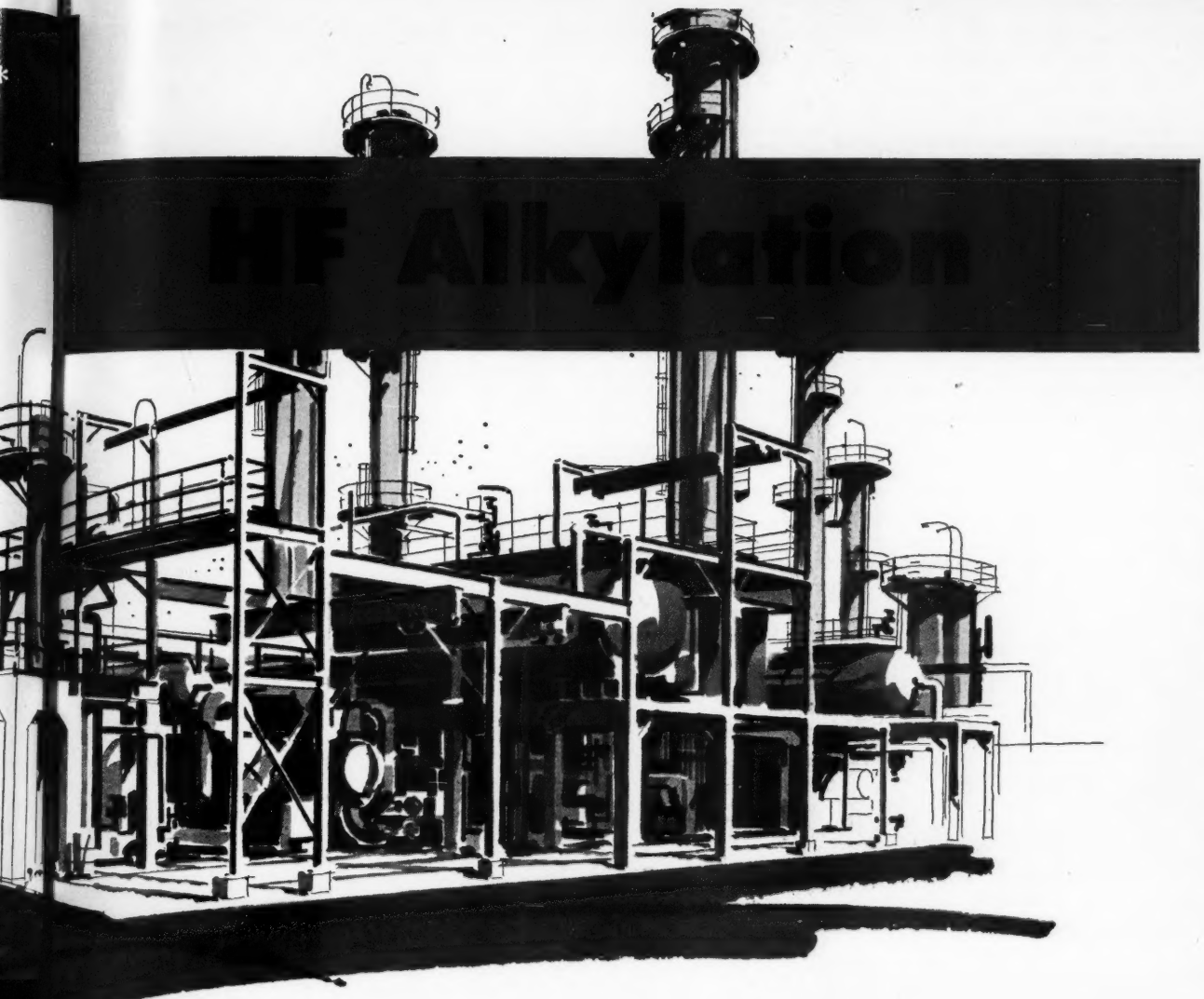

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Clyde Hall Ships New National Rig to Alaska

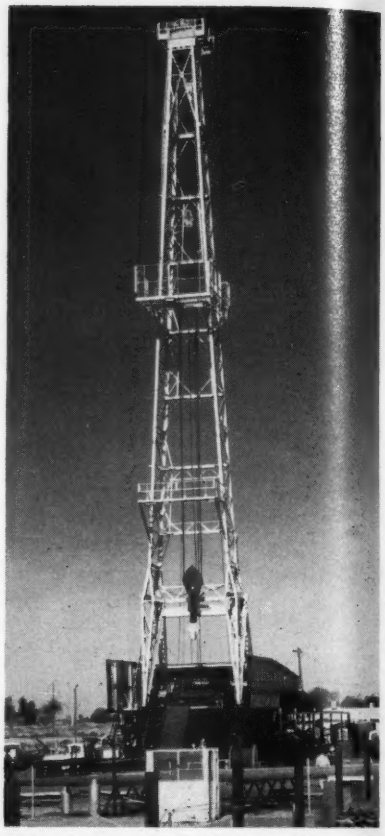
Clyde Hall Drilling Company recently shipped to Cape Yakataga, Alaska, a new National drilling rig where it will drill under contract for Richfield Oil Corporation.

The rig, completely assembled in the Clyde Hall Drilling Company's Bakersfield yard prior to shipment, is a National Type 110 with a 142 foot Lee C. Moore mast. The drawworks, rated at 1375 HP, has a normal drilling depth range of 11,000 feet to 16,000 feet. The drawworks includes a Type A Overrunning Clutch for the Hydromatic Brake and a Model No. 6 Micromatic Drilling Control. The drive group comprises a three-section power plant with Waukesha VLRDBU Diesel engines, National Hydraulic Couplings, 1½-inch pitch sextuple compounding chain and provision for driving two slush pumps from the rear.

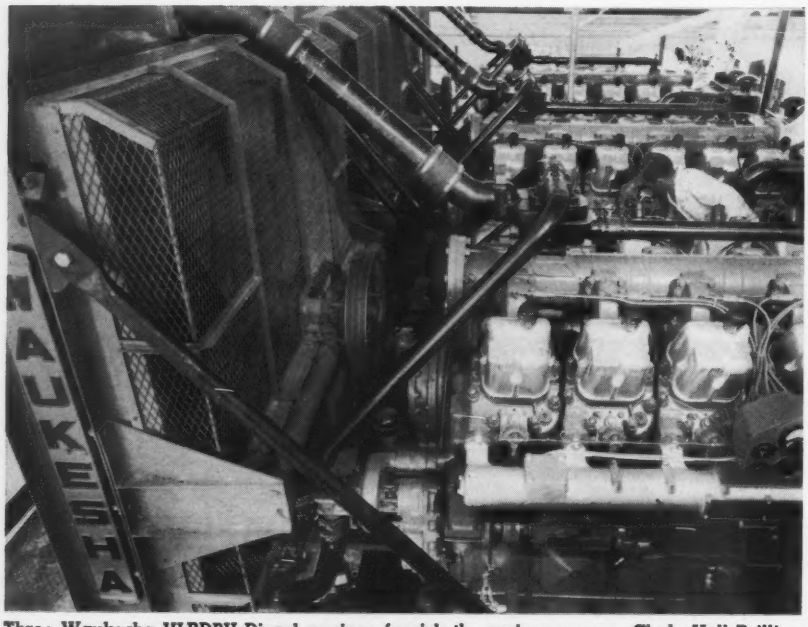
Weather-proof sheet steel covering on Clyde Hall Drilling Co.'s rig that will drill for Richfield Oil Corp. in Alaska.

A National Auxiliary Drawworks Drive is mounted integrally on the No. 1 section. This drive has a small hydraulic coupling which provides a very fine control of drawworks input power. It is used to control rotary speeds and torques and to obtain more efficient power distribution. Two slush pumps, a Type C-350 and a Type G-1000B, are belt driven and controlled by dual Dy-A-Flex clutches. The hook block is rated at 350 tons and sheaves are grooved for 1½-inch line. The swivel is a Type N-815; the rotary is Type MS-27½ with Type AS Roller Kelly Bushing and square kelly. The wire line anchor is a Type D with Martin-Decker Type D weight indicator.

Winterizing the unit for Alaskan service accounted for a great deal of thought and planning by Clyde Hall and his staff. Not only cold and snow but an annual rainfall of 162 inches had to be taken into consideration. The entire rig, except the floor and mast, is enclosed with weather proof steel sheeting. Sliding panels provide openings to the rig and to the main engine radiators. A 10-foot steel wall gives protection to the rig floor. Two Clayton steam generators which Clyde Hall says will give a 75% saving in fuel over conventional steam boilers provide steam for radiators strategically placed in the rig. Fans blowing the air through the steam radiators circulate heat. Two radiators are placed under the floor to keep blowout preventers from freezing. Two on the derrick floor for the drilling crew and two at the mud pumps to keep the lines thawed out; one is positioned with the water system directed on both water pumps; one at the mud shakers and one in the blowout accumulator house to keep the hydraulic lines from freezing.



National Type 110 drilling rig with Lee C. Moore 142-foot mast, assembled in Clyde Hall Drilling Company yard in Bakersfield.



Three Waukesha VLRDBU Diesel engines furnish the main power on Clyde Hall Drilling Company's new rig. George Hester is checking the engines.

Dual water pumps, mud mixers, fuel systems and 100KW electric generators powered by Waukesha 6WAKDBU Diesel engines and one Waukesha 80DLCU Diesel engine on an auxiliary pump complete the setup.

All of the Clyde Hall Drilling Company personnel who will be on the job in Alaska have been with the drilling organization for from 10 to 12 years.

Burtis McDowell will be the drilling superintendent and Charlie Lindsay tool pusher.

Richfield Oil Corp. holds a development contract with the federal government covering 489,622 acres in the Katalla-Yakataga area.

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Design Change in Grayloc Tubing Announced by J.&L.

To facilitate running tubing in multiple completion wells, the box end of Jones & Laughlin Steel Corporation's Grayloc Tubing now is being manufactured with a 1/16-inch bearing face and a 15-degree bevel.

This design change eliminates hang-up of tubing strings going into or coming out of a well. With the bevelled box end, Grayloc Tubing and an adjacent string of A.P.I. threaded and coupled tubing can slide past each other freely.

Grayloc Tubing, designed for use in high pressure wells because of its leak-resistant joints is available in 2⅜, 2⅞, and 3½-inch O.D. sizes, and in Grades J-55, N-80, and P-105.

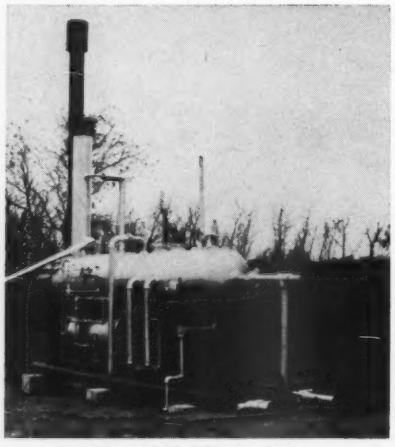
A feature of the Grayloc joint is a sealing ring with flexible lips that deflect within their elastic limit as the joint is made up and forms a surface seal against the mating seats in the tubing. This ring is made of nickel-plated heat-treated alloy steel. Pressure of gas or fluid in the tubing increases the effectiveness of this seal.

This drawing illustrates a design change in Jones & Laughlin Steel Corporation's Grayloc Tubing designed for use in high pressure oil and gas wells. Circled area magnifies the 1/16-inch bearing face and 15-degree bevel that prevents hang-up of the tubing going into or coming out of multiple completion wells.

National Introduces New Glycol Dehydration Unit

After many months of field tests, National Tank Company is now offering an all-new horizontal glycol dehydration unit with which dew point depressions as high as 85° and 90° have been obtained using HI-DRY liquid desiccant.

Two basic standard models are available—one with integral three-phase separator and glycol heating coil in the separator base; and a unit without separator but with a combination inlet scrubber and straightening vane to remove any liquids entrained in the gas. Both units are available with two or four trays according to the dew point depression required. Depressions from 95° to 110° are possible on the four tray unit.



Glycol Dehydration Unit

National Vari-Flo horizontal glycol trays, which eliminate dead spots and non-channeling of glycol, are used. Stainless steel removable Vari-Flo caps combine the best features of the sieve tray and bubble cap without the limitations of either.

Gas-glycol contact is automatically controlled according to gas volume permitting high contact efficiency at low as well as high flow rates.

Fire hazard is eliminated with the National flame arrestor. The units are pre-piped, shop hooked-up and insulated, and are ready for immediate service on delivery at lease after well and pipeline tie-in.

Advanced Multi-Stage Centrifugal Compressor Featured by York

A new line of high speed multi-stage centrifugal compressors in a simplified compact and rugged design is announced by York Corporation, a subsidiary of Borg-Warner Corporation.

These new Turbomaster Compressors are engineered for gas compression application including fractionation, liquefaction, chemical reaction, storage and refrigeration. According to J. H. Anderson, chief engineer for York Machinery Products, the Turbomaster line provides one of the most rugged, reliable answers to high speed gas compression offered to the petroleum and petrochemical industries. "For example," said Anderson, "this compressor has approxmiately 400 fewer parts than the conventional centrifugal compressor. Its shaft design combines extra stiffness for minimum deflection and vibration in the rotor areas with slimline diameter at the sealing and coupling end which materially reduces the sealing area and results in less wear on the seals. In addition, the compressors' lubrication system and oil tank are an integral part of the package, pre-fabricated to provide minimum piping at field installation.

Turbomaster compressors are built in tandem impeller arrangements and are available from 2 to 8 stages in a simple casing. Three casing sizes (26, 38 and 55 inch) are made in cast iron, nodular iron or cast steel construction. Impeller wheels are made in aluminum, high strength alloy steel and stainless steel. A variety of sealing arrangements and materials is also offered. Anderson pointed out that this choice of materials in casing and

impellers, plus choice of materials and arrangements in seals, allows most efficient custom application engineering of the Turbomaster to the particular corrosion, temperature and other specific operating requirements.

The Turbomaster line has the exclusive York adjustable prerotation vane inlet control which allows the operation to adjust—by power cylinder or handwheel—the pressure or capacity of the unit without throttling losses. This prerotation vane control generally eliminates requirements for variable speed drives.

Multiple Turbomaster casings can be bolted together in tandem using a common shaft and a single shaft sealing arrangement, plus full prerotation vane control in each casing.

Improved Instrumentation In Logging Units Announced by Lane-Wells

More accurate electrical logs can be run in less time as a result of recent advances in instrumentation design by Lane-Wells Company. The new instrumentation permits logging at 12% greater speed without loss of log quality. Logging at conventional speeds produces sharper definition of stratigraphy.

An exclusive advantage of the improved logging system is the calibration of all curves with the electrode in the well. This results in more accurate log scales.

Easier reading of the logs is a result of chart lines which are printed electronically. These lines are printed mechanically on conventional logs. Electronically printed logs are said to be more distinct and accurate.

All scales and log spacings with the new instrumentation are identical with those provided on conventional electrical logs. This insures easy correlation with existing logs in all areas.

C. L. Kirkman, sales manager for Lane-Wells Company, announced that all the company's logging units are now equipped with the improved instrumentation. Lane-Wells operates electrical logging units in most of the oil producing areas in the United States. The company also offers perforating and nuclear logging services.

SAVE RIG TIME

PORTABLE BATTERY POWERED WINCH

- DECREASE YOUR LABOR COST
- PREVENT INJURIES

Operates on 6, 12 and 24 volt electrical system of any vehicle.
HANDLES LOADS UP TO 4000 LBS.
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WAX THERAPY . . . Clarence Williams, (right) whose fingers were crushed when hand was caught in dough mixing machine, is being treated at Orthopaedic Hospital's rehabilitation center with paraffin therapy by Joe McKendrick, physical therapist. Wax and oil mixture retains heat and is benefiial in restoring use of paralyzed muscles.

Petroleum Products Can Be Used to Treat Handicapped

Petroleum products are playing an important role in treatment of the handicapped, according to Orthopaedic Hospital officials.

Among these are oils, vaseline, resin by-products, polyurethanes and many others, which are used in therapy and treatment of disabled youngsters and adults.

Perhaps the most unusual combination of oil products are parafffin wax and mineral oil which currently are being used to treat a Los Angeles baker whose hand was crushed when he slipped and the fingers of his left hand were caught in the water-tight steel doors of a dough mixing machine.

Although Orthopaedic Hospital is primarily an institution for handicapped youngsters through the age of 31, it also serves, on a pay basis, adult victims of catastrophic injury and disabling diseases.

To continue care of the Southland's crippled children, who are treated regardless of race, creed or ability to pay, funds are being sought for a new $6.5 million orthopaedic center.

Contributions to the building fund may be sent to Orthopaedic Hospital, Los Angeles 7.

Grant Oil Tool Acquires Cosasco

William B. Prosser, president of Perfect Circle Corporation, and Albert Salvatori, vice president of Grant Oil Tool Company, announced this month the acquisition of the assets and inventories of Perfect Circle's Cosasco Division to the Grant Oil Tool Company, effective July 13.

Cosasco, located in El Monte, California, manufactures a line of patented access fittings (the original "Scotch" nipple) which allow access to pressure vessels and lines without shutdown. These fitting are used both in corrosion survey equipment and in unitized wellheads.

According to Mr. Salvatori, the new acquisition will be known as Cosasco Division of Grant Oil Tool Company.

Copies of Technical Papers Presented at World Congress Available Upon Request

Orders for more than 150,000 copies of the 280 technical papers presented June 1-5 at the Fifth World Petroleum Congress in New York have been filled and requests continue to be received from oil men in many countries at a rate which is fast depleting the remaining stocks, the Secretariat reported.

Orders for the Proceedings or individual papers may now be placed with the General Secretary, Fifth World Petroleum Congress, Inc., 527 Madison Avenue, New York 22, New York.

More Service Centers for Steel and Aluminum Users

Earle M. Jorgensen Co., steel and aluminum distributor, has just opened a new plant in Wichita, Kansas. This represents a step in the company's current program of expansion into growing industrial areas.

According to Earle Jorgensen, president, "Rapid growth of aircraft and other industry in the Wichita area is causing an increased need on the part of steel and aluminum users for local service center facilities."

The Jorgensen company had its beginnings in Los Angeles in 1923 and now operates a total of nine service centers in California, Texas, Oklahoma and Kansas, carrying complete stocks of all sizes, shapes and analyses of steel and aluminum for immediate shipment in company-owned trucks.

Definite plans for the near future include the establishment of plants in Phoenix, Denver and Seattle. Ground has already been broken at the first two of these locations, and negotiations have been completed for an existing building at Seattle.

K. C. Vaughan

CNGA Installs New Officers

The Board of Directors of the California Natural Gasoline Association welcomed K. C. Vaughan to the office of president at its annual meeting at the Biltmore Hotel July 14. Vaughan, who is manager of the natural gasoline and gas department of the Union Oil Co. of California, accepted the gavel from H. J. Maxwell, Standard Oil Co. of California, the retiring president. J. A. Smith, superintendent of gas and gasoline plants, Texaco, Inc., took office as vice-president and advisory committee chairman.

Newly elected to the Board of Directors for a two year term were: J. B. Armstrong, Standard Oil Co. of California; D. R. Arnold, Signal Oil & Gas Company; L. E. Clasen, Richfield Oil Corporation; Les Gfeller, General Electric Company; F. H. Lacy, Jr., Honolulu Oil Corporation; Milton Lewis, Ralph M. Parsons Company; Harvey Menard, Signal Oil & Gas Company; D. E. McFaddin, Union Oil Co. of California and E. P. Valby, Richfield Oil Corporation.

E. R. Millett, Jr. was reappointed secretary-treasurer of the Association.

TRAINED TO SUCCEED

No matter what they start with—lemonade or magazine subscriptions—youngsters quickly learn that it takes more than enthusiasm to succeed in business.

For, as most of us know, a successful business requires more than the desire to go into it. Training . . . ingenuity . . . and oftentimes the courage to keep going are equally necessary. General Petroleum believes it's important to train young people to succeed in our free enterprise system. Throughout the West we are an active sponsor of the Junior Achievement movement.

Under the volunteer counsel of General Petroleum people, teenagers learn the world of business by being in business. They set up their own corporations . . . make their own products . . . sell stock to family and friends, thus duplicating all the processes of a bona fide business. Experience gained from this extracurricular "learning by doing" provides a foundation for success in years to come.

The participation of General Petroleum and its people in Junior Achievement is another of the many efforts we are making to benefit America's younger citizens.

General Petroleum Corporation

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Mobil

2-565

Field Development

Pacific Coast and "4" Corners

LOS ANGELES BASIN

Elizabeth Canyon Test Deepening

Seattle-Toledo Oil Co., Inc. is drilling below 3200 feet on Seattle-Toledo-Lyons No. 1 located in Section 7-5n-16w. The test was originally drilled by the North Star Mining Company and suspended at a depth of 2518 feet.

Culver City Test

Continental Oil Company has announced the final location for its test on the M.G.M. Studio lot. Location for the 9000 foot test is 140 feet southeasterly and 134 feet easterly from the intersection of Overland and Montana Streets on Section 12-1s-15w.

Change in Management

Kent Oil Company, M. K. Doumani president, has taken over the control and management of the Dumm Bros. Petroleum Company. They have properties in Wilmington, Long Beach Harbor and the Edison field.

Four Sansinena Field Wells

Union Oil Co. has announced locations for four wells in the field. Surface locations for Sansinena No. 5B-84, 5B-85, 5B-86 and 5B-87 are all in the southeast quarter of Section 30-2s-10w.

San Clemente Tests

Humble Oil and Refining Co. has two tests drilling in the area. Hugo A. Forster et al No. 1 in Section 16-8s-7w is drilling below 3000 feet and Clarence Reed et al No. 1 in Section 35-8s-7w is drilling below 2750 feet. Humble's O'Neill Estate No. C-2 in Section 10-8s-7w drilled to a total depth of 3900 feet and was abandoned.

Saugus Test Abandoned

Union Oil Company's Bonelli No. 2 located in the northwest quarter of Section 14-4n-16w drilled to a depth of 3096 feet and after running an electric log was plugged and abandoned. The test was one mile northeast of the Saugus area production.

Chino Hills Test

Miller Drilling Company has started Greening No. 1 located north and east from the center of Section 28-2s-8w. The test will be drilled to about 3000 feet and is one-half mile northeast of the Chino-Soquel production.

Tapia Canyon Test

Intex Oil Co. is grading location for Hartje No. 4 a shallow test, located in the northwest quarter of Section 31-5n-16w.

SAN JOAQUIN VALLEY

Shale Point Wildcat Test

Beach, Church & Bell, Bakersfield operators, are drilling below 750 feet on Scherrer No. 3 after cementing 8⅝" casing at 298 feet. Located in the northwest quarter of Section 36-26s-18e, the test is being drilled by Newton Drilling Co.

North Tejon Well Testing

In the Sebastian area, Standard Oil Company's Universal Consolidated-S.P. No. 338-9 is pump testing and recovering 10 b/d oil and 1 b/d water from the perforated intervals 8354-8188 feet and 7967-7852 feet. Located in the southwest quarter of Section 9-11n-19w, the well was drilled to 13,801 feet and redrilled to 8354 feet. 7" casing is cemented at 7850 feet and a 5½" perforated liner is landed at 8354 feet.

Southeast Rosedale Wildcat

Shell Oil Company is grading location for Shell-Camp-Moncure et al No. 24-7 in the northwest quarter of Section 7-29s-27e. The well location is approximately 4500 feet southeast of the Rosedale Ranch field.

McKittrick Test Blows Gas

While drilling at 2850 feet, Maggini Construction Co.'s Standard-USL No. 1 blew gas, out of control for 6 hours. The well was killed and drilled to a total depth of 3129 feet, plugged back to 2032 feet and cemented 4½" casing at 1690 feet. Preparations are now under way for a production test. Location of the well is in the southeast quarter of Section 10-30s-22e, two miles northeast of McKittrick.

Seven Cymric Locations Staked

Standard Oil Co. has staked loca-

Richfield Oil Corporation's well, Parcel A-31, in the Long Beach field with Fred Johnson Drilling Company handling the work. Left to right: L. McCombs, driller; E. P. Monroe, derrick; C. E. Spencer, cathead; D. W. Thomas, lead tong, and C. Farquhar, racker.

HERE'S THE ANSWER... for shallow well packers!

The new **HALLIBURTON R-3 TREATING PACKER** for treating, water flooding and producing... can also be used in shallow or low-fluid wells. Short... compact... retrievable ...and dependable, for running on tubing to isolate sections... for *workover and treating* under pressures up to 5000 psi differential. Can be run as tension or compression packer.

The need for tubing hold-down... as in conventional hook wall packers... is eliminated when set in tension since the R-3 *TREATING PACKER* is self-anchoring against pressures from below. When set in compression a hydraulic tubing hold down is used. This arrangement offers the true practical operation for use of this packer at shallow depths.

- **Full-opening mandrel permits passage of wire line type tools, instruments or perforating guns.**
- **Retrievable, may be set and reset on one trip in hole or used from well to well.**
- **Design makes redressing and replacement of parts a single operation.**
- **Safety joint allows tubing to be removed. Packer is easily drilled if conditions prevent normal removal.**

Halliburton Oil Well Cementing Company now proudly adds the R-3 *TREATING PACKER* to its field-tested and proven line of superior quality packers. From the same engineering skills and years of successful experience, that has made Halliburton *foremost in oil well servicing*, comes this newest tool to fill a specific need.

Call your nearby Halliburton Representative for purchase price and full details on the "money-saving" R-3 TREATING PACKER.

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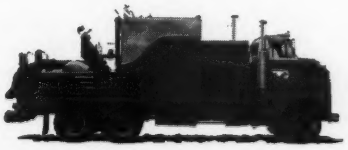

tions for seven Cymric field wells. Weston No. 51 will be drilled in Section 27, wells No. 10-1-35 and 10-2-35 in Section 35, McPhee No. 2-1A in Section 36, 29s-21e. Well No. 1-9A-31X will be drilled in Section 31-29s-22e and Sea Breeze No. 4-4 and No. 9-8 are located in Section 6-30s-22e.

San Emidio Nose Completion

Richfield Oil Corp. completed KCL-H No. 21-9 flowing 570 b/d of 30 gravity oil with a cut of one percent. Flow was through a 25/64" bean and gas was gauged at 140 mcf per day. Located in the northwest quarter of Section 9-11n-21w, the well drilled to a total depth of 12,050 feet and has 7" casing cemented at 11,004 feet. A 5" liner, perforated at intervals from 12,047-12,002 feet, was landed at 12,047 feet and cemented through ports at 12,002 feet.

Rio Bravo

Joseph M. Thomas, after running an electric log, abandoned KCL No. 1 at a total depth of 5850 feet. The test was located in the southwest quarter of Section 19-28s-25e, two miles northwest of the Rio Bravo field.

Guijarral Hills Wells Deepening

Sunray Mid-Continent Oil Co. resumed operations on Fred Smith No. E86-34F and is deepening below 9000 feet. The well will test the Gatchell Zone. Located in the southeast quarter of Section 34-20s-16e, the well was originally completed by the Barnsdall Oil Co. in 1949 flowing from the Leda Zone.

Standard Oil Co. is deepening well No. 504-35F at approximately 9010 feet. Located in the northwest quarter of Section 35-20s-16e, the well was first completed as number 304-35F from a depth of 8310 feet.

Union Oil Co. is deepening and drilling ahead at 9825 feet on well No. 65-34F. Located in the southeast quarter of Section 34-20s-16e, the well was first completed in 1949 by Robert S. Lytle, Operator from a depth of 8230 feet.

Fresno County Test For Herndon

Sam B. Herndon is grading location for Well No. 1 in the southwest quarter of Section 22-16s-18e. The test will be drilled to approximately 7000 feet and is two miles northwest of the Burrel field.

Deep Test for Standard

In the Westhaven area in Fresno County, Standard Oil Co. has staked location for Haven-Boston No. 313 in the southwest quarter of Section 23-20s-18e, about ten miles north of Kettleman Hills. The test is slated to go to 14,000 feet and is about one mile southwest of General Petroleum Corp.'s B.L.C. No. 44-14 which was drilled to 14,724 feet and recovered some 29 gravity oil from the interval 13,146-13,174 feet.

Fresno County Test

In the Guijarral Hills area, The Sun Drilling Company is drilling below 3000 feet on Guijarral Service No. 44-22 located in the northwest quarter of Section 22-20s-16e. The well will be drilled to approximately 8500 feet and is ½ mile northwest of production.

Ant Hill Test Abandoned

Richard S. Rheem, Operator, abandoned Amerada-USL No. 44X-14 at a total depth of 4439 feet. An electric log was run and sidewall samples taken. The test was located 4000 feet northeast of production in Section 14-29s-29e.

McFarland Test Abandoned

Trico Oil and Gas Company abandoned KCL No. 16X-30 after drilling and coring to a total depth of 3500 feet. The test was three miles south of McFarland in Section 30-26s-26e.

Reserve Dual Completion

Reserve Oil and Gas Company completed B.W.-S.P. No. 358-17 as a dual completion flowing 537 b/d of 35 gravity oil, cutting one percent from the Upper Zone, perforated from 12,044-11,638 feet. Flow was through a 16/64" bean with 1500 psi flow pressure and gas was gauged at 865 mcf per day. From the Lower Zone, perforated from 12,717-12,577 feet, production was 70 b/d cutting one percent through a 12/64" bean along with 249 mcf of gas. Located in the southeast quarter of Section 17-11n-19w, the well was drilled to a total depth of 12,720 feet and cemented 7" casing at 11,640 feet. A 5" liner was hung at 12,717 feet and cemented through perforations at 12,555 feet.

Jasmin Well Testing

Pacific Oil and Gas Development Corp. is preparing for a production test on W.G.O.-Unit-A No. 54-30 located near the center of Section 30-25s-27e. Drilled to a total depth of 4243 feet, a formation test of the interval 4205-4243 feet, indicated sufficient showings to warrant cementing 7" casing at 4210 feet.

Mountain View Test Completing

Standard Oil Company is preparing to recomplete Jewett No. 2-8 after deepening from 6700 feet to 8210 feet. Before running casing, on a formation test of the interval 7991-8110 feet, the well flowed 1150 b/d of 40 gravity oil cutting 8.0 percent sand and mud, no water. Located in the southeast quarter of Section 16-31s-29e, the well was first completed in 1947 from a depth of 6700 feet. 5½" casing, with 180 feet of perforations on bottom, is landed at 8204 feet and cemented through perforations at 8024 feet.

COASTAL AREA

Squaw Flats Wildcat

John Baldwin of Sherman Oaks is drilling below 600 feet on Baldwin-Copa No. 1 located in the northwest quarter of Section 5-5n-19w. The test will be drilled to approximately 2500 feet.

Naples Offshore Well Suspended

Phillips Petroleum Co. has suspended operations on Phillips Pet.-Pauley et al-State 2205 E.T. No. 2 at a total depth of 8175 feet. Location of the test is in projected Section 14-4n-30w.

Cojo Offshore Test Drilling

Phillips Petroleum Co. is drilling below 2000 feet on Phillips-Pet.-Pauley et al-State 2207 E.T. No. 3. The test is located in projected Section 11-4n-34w.

ENGINES

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Sespe Completion

H. L. Hall completed Central No. 6, an extension test, pumping 150 b/d of 29 gravity oil cutting 1 percent. Located in the southwest quarter of Section 6-4n-19w, the well was drilled to a total depth of 1039 feet and has 10" casing cemented at 570 feet and an 8⅝" all perforated liner is landed at 1037 feet.

Ventura County Test Abandoned

Franco Western Oil Co. abandoned Texaco-Security First National Bank No. 1 after drilling and coring to a total depth of 8010 feet. The test was located in the northeast quarter of Section 15-2n-21w on the Springville Dome, four miles northeast of the Oxnard field.

Kern Oil Abandons Wildcat

Kern Oil California Limited has abandoned Williams No. 1 located in the northeast quarter of Section 33-3n-19w at a total depth of 4375 feet. An electric log was run but no tests were made.

West Montalvo Test Abandoned

Standard Oil Company's McGrath 4 No. 156-2, an extension test located in the southeast quarter of Section 26-2n-23w, drilled to a total depth of 7865 feet and has been plugged and abandoned.

Arroyo Grande Tests Abandoned

Husky Oil Company has suspended operations on two strat. tests, both located in Section 25-31s-12e. Guidetti No. 8 has a total depth of 640 feet and Guidetti No. 9 is bottomed at 440 feet.

Offshore Well Testing

Standard Oil Company's Summerland offshore well, Standard-Humble-Summerland-State No. 4, located in projected Section 35-4n-26w is running a series of production tests. No information, except the total depth of 10,759 feet, has been released.

San Miguelito Well Redrills

Continental Oil Company resumed operations on Grubb No. 704 and is redrilling below 12,259 feet. Located in Section 19-3n-24w, the well was originally completed from a depth of 12,788 feet. Continental's Grubb No. 201 in Section 24-3n-24w is drilling below 11,650 feet.

NORTHERN CALIFORNIA

Gas Test for Universal

Two miles southeast of the Durham Gas area in Butte County, Universal Consolidated Oil Co. is grading location for Nissen No. 1 in the southwest quarter of Section 15-20n-1e. This 3500 foot test well will be drilled by the Brown Drilling Co.

Contra Costa Gas Test

Trico Oil and Gas Company is ready to spud Faria Unit No. 2, a 2500 foot test located in the northeast quarter of Section 21-2n-1w in Contra Costa County. The well will be drilled by Len Owens and is a southeast offset to its discovery well, Faria Unit No. 1.

Vernalis Test Abandoned

In San Joaquin County, Standard Oil Company has abandoned Blewett Community No. 7 at a total depth of 4351 feet. The well was located in the west quarter corner of Section 25-3s-6e.

Rio Vista Deep Test

Northwest of the Rio Vista Gas field, Standard Oil Co. has staked location for Peter Cook No. 11. The well, a 15,000 foot test, will be drilled near the northeast corner of Section 8-4n-3e.

Sunray Mid-Continent Test

In the River Island area of San Joaquin County, Sunray Mid-Continent Oil Co. has announced a location for Sunray-Brazos-Beistario No. 2 located in the southeast quarter of Section 15-4n-4e. The well is an easterly extension test of the field.

Butte County Gas Test

In the Afton area, Charles R. Jacobson, Operator of Santa Barbara, is planning on drilling Western Gulf-Lemberg No. 1 in Section 35-19n-1e. The test will be drilled to approximately 4250 feet.

Deeper Pool Discovery

Porter Sesnon et al and Great Basins Petroleum Co. completed Mohawk-Boltzen-Hunter No. 76-16 as a deeper pool discovery flowing 8000 mcf of gas per day. Production is from the Tracy Sand, the first time the sand has produced at Vernalis. Located in the southeast quarter of Section 16-3s-6e, the well drilled to a total depth of 5067 feet and cemented 5½" casing at 5000 feet. The hole is plugged back inside the casing to 4954 feet.

Colusa County Test Abandoned

Artnell Company's wildcat test in the Wild Goose area, Western Gulf-Behring No. 1, drilled to a total depth of 3881 feet and was abandoned, after running logs and sidewall sampling. On a test of the interval 3077-3247 feet there was a light blow of gas and a recovery of 2927 feet of salt water. Location of the test was in the southwest quarter of Section 12-17n-1w.

Beehive Bend Test Suspends

W. S. Payne, Jr. & Associates suspended operations on Kimjones No. 1 after deepening to 6342 feet. Located in the center of the northwest quarter of Section 14-19n-2w, the well was originally completed by General Petroleum Corp. in 1954.

Willow Pass Test Abandoned

Trico Oil & Gas Company's Contra Costa County test, Nevis Unit No. 1, after drilling to a total depth of 2454 feet, was plugged and abandoned. Located in the southwest quarter of Section 16-2n-1w, the test was a northwest offset to the company's recently completed Faria Unit No. 1.

Glenn County Test Abandoned

In the Perkins Lake area, Kenneth Sperry has abandoned Pinkham-Wolfe No. 1 at a total depth of 6360 feet. The test was located in the northeast quarter of Section 7-20n-1w, three miles northwest of the Perkins Lake gas area.

Beehive Bend Abandonment

Ben J. Taylor's Wolcott No. 1 drilled to a total depth of 6200 feet and after running an electric log was plugged and abandoned. Location of the test was in the southeast quarter of Section 11-19n-2w in Glenn County.

Texaco Inc. Core Holes

Texaco Inc. is under way on an extensive core holing program in the Sacramento Valley. In the McDonald Island area, in San Joaquin County, Wright Tract Core Hole No. 1 will be drilled in Section 36-2n-5e. Five holes will be drilled in Solano County. English Creek Core Hole No. 1 in Section 33, No. 2 in Section 18 of 7n-1w and No. 3 in Section 9-6n-1w. In the Pleasant Creek area, Core Hole No. 1 will be drilled in Section 33-8n-1w and in the Winters area, McCune Core Hole No. 1 will be drilled in Section

32-8n-1e. One hole will be drilled in Tehama County, Vina Core Hole Co. 1 in Section 18-24n-1w, and one test in Yolo County, Peters Core Hole No. 1 in Section 30-8n-1w.

Sutter County Test

In the Wild Goose area, Richard S. Rheem, Operator is preparing to spud Greenhead No. 1, a wildcat test located in the southwest quarter of Section 30-17n-1e. Rusty Walters has the drilling contract and Wm. McBurnie will do the engineering.

First Completion for Brown

E. C. Brown, formerly president of Brown Drilling Co., completed Staten Island Land Co. No. 1 flowing 1700 mcf of gas per day through a the Brown Drilling Co., completed 16/64" bean with 1900 psi flow pressure. Located in the northwest quarter of Section 4-3n-4e, near the River Island area in San Joaquin County, the well was drilled to a total depth of 4000 feet and cemented 5½" casing at 3800 feet. Casing was gun perforated in three sands within the intervals 3707-3675 feet. A total of twenty feet of perforations are open to production.

Texaco Inc. Sacramento County Test

In the Georgiana Slough area, Texaco Inc. is grading location for Dye No. 1 in the northeast quarter of Section 2-4n-4e. The well is a southeasterly offset to the Brazos Oil and Gas Company's recently completed Fong Unit No. 1.

Yolo County Test for Amerada

Three miles east of the Millar gas production, Amerada Petroleum Corp. is drilling below 7200 feet on Vaughn No. 1. The test will be drilled to approximately 8000 feet and is located in the northeast quarter of Section 5-6n-3e.

OTHER STATES

Nevada

Shell Oil Company's Clark County test, Bowl of Fire Unit No. 1, has been abandoned at a total depth of 5919 feet. Located in the southwest quarter of Section 5-20s-66e, the test was originally scheduled as an 8000 foot Paleozoic test.

Tri-State Exploration Company of Denver, Colo., has announced location for a wildcat test, Miscal-Government No. 1, to be drilled in the northeast quarter of Section 22-21s-56e, about thirty miles southwest of Las Vegas.

Washington

In Pacific County, Tideland Oil & Gas Corp. is drilling below 5000 feet in shale and Volcanics on Tideland-Weyerhauser No. 7-11 located in Section 7-11n-10w.

Shell Oil Company is making drilling arrangements to drill Sturdevant No. 1, a stratigraphic test, located in the northwest quarter of Section 27-12n-2w in Lewis County.

New Mexico

Benson-Montin-Greer Drilling Company's San Juan County wildcat test, Douthit No. 1 in Section 5-27n-13w, was drilled to a total depth of 6088 feet in Dakota and has cemented casing for a production test. Nearest Dakota production is three miles to the northeast.

Consolidated Oil and Gas Co. reached a total depth of 8445 feet on Jicarilla No. 1 and has plugged back to 8129 feet for a test of the Gallup. The well is located in Section 15-27n-2w.

Scott Brothers Drilling Co. has abandoned Magnolia-Navajo No. 1 in Section 20-28n-16w at a total depth of 2377 feet. Magnolia-Navajo No. 2 in Section 19-28n-16w is drilling below 1500 feet. Two more wells will be drilled in the area.

Utah

Pure Oil Company has staked location for Northwest Lisbon No. 1 in the northwest quarter of Section 10-30s-24e in San Juan County. This is Pure Oil's second Cambrian test and will be drilled to approximately 10,000 feet.

Texaco Inc. completed Navajo-P No. 18 flowing 1000 b/d through a 1" bean with 100 psi tubing pressure. Located in Section 34-40s-25e, the well was drilled to a total depth of 5917 feet and cemented 4½" casing at 5917 feet. The casing was gun perforated at intervals from 5910-5828 feet.

Alaska

Anchorage Gas and Oil Development Co., Inc. are building roads to drill Rosetta No. 4 in the northwest quarter of the northwest quarter of Section 21-18n-3w in the North Anchorage area. Robin Willis is the Engineer and Geologist in charge. The company is also preparing to deepen its Rosetta No. 3 in the southwest quarter of the same section, which has been suspended since October 1958. They plan to deepen from the present depth of 6105 feet to approximately 8000 feet.

Union Oil Company and The Ohio Oil Company are drilling below 10,000 feet on Union-Ohio-Kenai Peninsula in Section 6-4n-11w.

American Pipe and Nukem In Merger for New Growth

American Pipe and Construction Co. of Monterey Park, Calif. and Nukem Products Corporation of Buffalo, N. Y. have completed a merger designed to provide increased facilities on two coasts for the activities of each company in the field of corrosion-resistant products. Announcement was made jointly by Robert V. Edwards, chairman of the board and president of American, and William Schoellkopf, representing the board of Nukem.

Under the new arrangement, Nukem will be closely allied with Amercoat Corporation, an American subsidiary headquartered in South Gate, Calif., since both produce complementary products designed to solve corrosion problems in the refining and petrochemical fields. Nukem has for 35 years specialized in acid-proof cements and the design of acid-resistant floors and brick-lined tanks. Amercoat is a leading manufacturer with international distribution of corrosion-resistant materials including protective coatings, reinforced plastic pipe and plastic membranes.

Plans are already under way to expand facilities at South Gate and Buffalo to give Nukem and Amercoat dual manufacturing and warehousing bases, an advantage which will shrink shipping distances and shorten delivery time.

General direction of both Amercoat and Nukem will be unified under G. E. Seidel, executive vice president of Amercoat, while John W. Chandler, formerly president of Nukem, will retain direct responsibility for the operation of the Buffalo plant and the sales of Nukem products.

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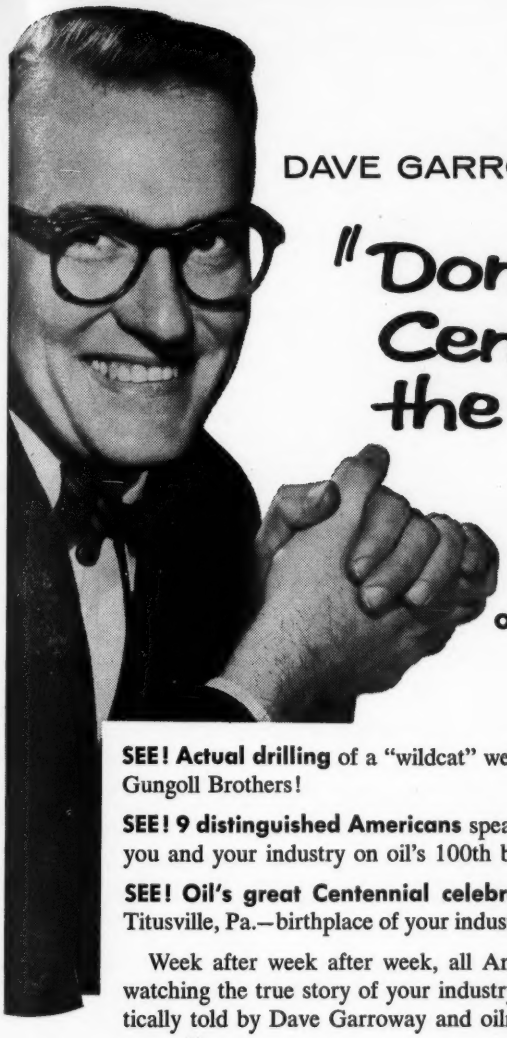

DAVE GARROWAY SAYS:

"Don't miss your own Centennial story on the today show! NBC-TV!"

On the air now! A series of dramatic, on-the-spot reports telling the real story of oil and oil's first century.

SEE! Actual drilling of a "wildcat" well by the Gungoll Brothers!

SEE! 9 distinguished Americans speak up for you and your industry on oil's 100th birthday!

SEE! Oil's great Centennial celebration in Titusville, Pa.—birthplace of your industry!

Week after week after week, all America is watching the true story of your industry, realistically told by Dave Garroway and oilmen like yourself.

The TODAY Show has already presented the fabulous International Oil Exposition with oilmen from all over the world. Now you'll meet the Gungoll Brothers and their family and fellow workers . . . "wildcatters" who will take you along to northwest Oklahoma in their search for oil.

You'll share their dreams, their gambles and witness the actual drilling of their well, "Big Dave #1."

On August 27th, you'll see oil's great Centennial celebration, direct from Titusville, Pa.—the birthplace of your industry.

See this exciting new series with your family on June 25, July 2, 16, 30, August 13 and 27. Tell your neighbors and customers to see it, too! See the TODAY Show from 7-9 a.m. on the above dates on your local NBC-TV station!

All summer long, these 9 distinguished Americans will wish a happy 100th birthday to you and your industry:
Gen. A. Gruenther
Norman Rockwell
Donald Douglas
David Sarnoff
Harvey Firestone, Jr.
Frank Pace
Eric Johnston
Gen. Mark Clark
John J. McCloy

THIS LAUGH OFF!!

The reporter was interviewing a Hollywood starlet who had just become a star. "If you were shipwrecked on a desert island," he asked her, "what would you like to have along as reading matter?"

The starlet gave him a dimpled smile and said: "A tattooed sailor."

Just as the elderly man stepped from the curb, a huge dog tore around the corner and knocked him flat on his back. He had barely struggled to his feet when a small foreign car brushed against him and knocked him down again. A passerby rushed over and helped the old boy to his feet. "Are you all right?" he asked.

The old man steadied himself, then replied, "That dog didn't hurt me any, but that danged can tied to his tail nearly killed me."

Two cows were grazing alongside a highway when a tank-truck of milk on its way to the distributor happened to pass by. On one side of the truck in big red letters was a sign which read, "Pasteurized, homogenized, standardized, Vitamin A added." One cow turned to the other and remarked, "Makes you feel sort of inadequate, doesn't it?"

The cute little blond talking to the wealthy Texan . . . "How much did you say your name was?"

A car screeched to a halt at an intersection, barely missing a white-haired old lady. But instead of giving the driver a tongue-lashing, she recovered herself quickly, smiled sweetly and pointed to a pair of baby shoes dangling from his rear-view mirror.

"Young man," she asked, "why don't you put your shoes back on?"

When the proud father called up the printer to order cards announcing the birth of twins, the girl at the order desk didn't quite catch the message over the phone.

"Will you repeat that?" she asked.

"Not if I can help it," was the reply.

Husband: "Darling, I brought home some things for the one I love. I bet you can't guess what they are."

Wife: "Razor blades, chewing tobacco, and a bottle of liquor."

A young chap was told he could have a job in a clothing store if he sold a certain suit. And it was a dilly, light purple with white stripes and red dots. But the applicant said: "O.K. It's a deal."

About an hour later the manager saw him come running, his pants torn, blood on his hands and a wild look in his eyes. But he panted out: "I sold the suit."

"But you seem to have encountered quite a lot of customer resistance," the manager said.

"No, the customer was easy," the new clerk replied, "but I sure had a bad time with that seeing eye dog!"

A colonel was transferred to a new command. On reaching his depot, he found stacks of old documents accumulated in the archives of his predecessors, so he wired headquarters for permission to burn them. The answer came back:

"Yes, but make copies first."

The woman was reporting the disappearance of her husband to the police.

"Is there any message you wish to give your husband if we find him?" asked the police chief.

"Yes," she replied eagerly, "Tell him mother didn't come after all!"

John interrupted the teacher, who was giving a lesson on creation, and said his father had told him that they were descended from apes.

The teacher: "Your private family matters have no interest for the class."

Johnston Stainless Welding Rods

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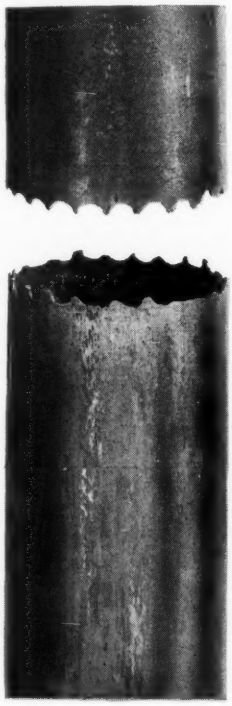
Lower a McCullough Chemical Tubing Cutter to the desired depth. Push a button. Before you can snap your fingers, your tubing is cut.

This electric wire line tool applies the enormous power of halogen fluorides to cut tubing as easily as a knife cuts through hot butter – and it's a smooth, flare-free cut – no burrs nor distortions on either the OD or ID of the tubing.

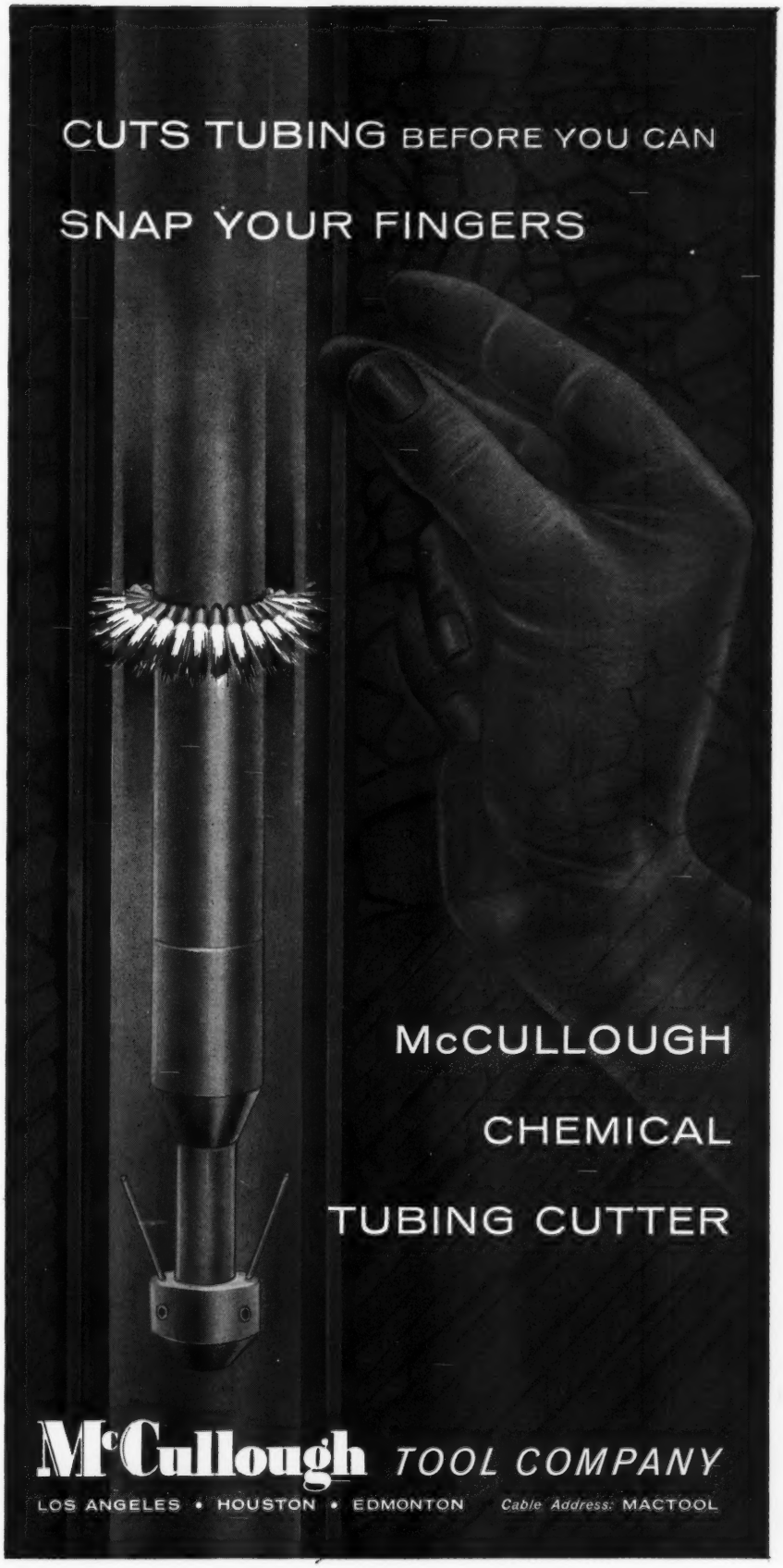
Cutting action is closely controlled. The outside casing



or tubing will not be damaged. Entire operation is 100% junk-free, as no part of the cutter is expendable.

Compared to mechanical methods, you will make significant savings in valuable rigtime when you use the McCullough Chemical Tubing Cutter. Available for 2" and 2½" tubing at all McCullough Service locations.

Additional Service Representative: Houston Oil Field Material Company, Inc.



Acidizing? Fracturing? Waterflooding?

GET HIGHER INJECTION RATES with LOWER PUMP PRESSURES

Case History No. 1

Area – West Texas
Formation – Ellenberger Dolomite
Depth – Below 12,000'

BEFORE VIBRO-FRAC, acidizing injection rate averaged .15 bbls. per minute at 6500 p.s.i.

VIBRO-FRAC treatment started with perforating six feet of the casing with E-Gun and three VIBRO-PERFORATOR shots. This was followed by two open hole type VIBRO-FRAC charges in a 19' section of open hole and two casing type VIBRO-FRAC charges in the six foot section of cased hole.

After VIBRO-FRAC, acidizing injection rate started at 1.9 bbls. per minute at 5800 p.s.i. The injection rate increased to 7.3 bbls. per minute and the pressure dropped to 2600 p.s.i.

Case History No. 2

Area – West Texas
Formation – Devonian Chert
Depth – Below 8,500'

BEFORE VIBRO-FRAC, this formation would not take acid in offset wells.

The twelve foot zone of interest was perforated with 72 E-Gun holes and three VIBRO-PERFORATOR shots. Three casing type VIBRO-FRAC charges were spaced in the twelve foot zone.

AFTER VIBRO-FRAC, formation took acid at the rate of 2.4 bbls. per minute at 1500 p.s.i.

Acidizing a formation can mean the difference between a commercial producer and a dry hole. But how do you acidize a formation that won't take acid?

Many formations require extremely high pump pressures. Some formations won't break down at all. For these wells pre-treatment with VIBRO-FRAC, Lane-Wells explosive well stimulation service, makes acidizing practical. Selective fracturing produced by VIBRO-FRAC treatment opens up the formation — lets the acid in to do its work.

Improved VIBRO-FRAC charges can be run without depth or pressure limitations. Ask your Lane-Wells man how VIBRO-FRAC can help you with acidizing—or any type of fluid injection problem formations.

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